THE NEVADA STATE MUSEUM

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CARSON CITY, NEVADA OCTOBER 1963

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DEER CREEK CAVE

ELKO COUNTY, NEVADA

By

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and

RICHARD SHUTLER, JR.

With Contributions By

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CARSON CITY, NEVADA OCTOBER 1963

SPO, Carson City, Nevada, 1965

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INTRODUCTION

The excavations in Deer Creek Cave were carried out by the Nevada State Museum during the summer of 1960 with the kind premission of the owner of the land, Mr. Jack W. Campbell of Buhl, Idaho.

Deer Creek Cave, designated as El-25 in the files of the Archaeological Survey of the Nevada State Museum, is located on the north bank of Deer Creek, facing southeast, near the juncture of Deer Creek and the Jarbidge River in T. 46 N., R. 8 E., of Section 28, Jarbidge Quadrangle USGS map. It is about 4 miles north of Jarbidge, Elko County, Nevada. The cave lies on a hillside about 500 feet above the level of Deer Creek at an elevation of about 5,800 feet (see Fig 1).

The width of the cave at the mouth is 12 feet 7 inches. The width narrows as one approaches the back wall. The length of the cave from front to back is 43 feet 3 inches. The height of the cave roof above the surface of the deposit before excavation was 15 feet at the mouth of the cave. The surface gradually sloped upward towards the rear of the cave so that the height of the ceiling above the surface of the deposit was only 3 feet at the back wall. The bedrock floor of the cave also slopes up toward the rear of the cave. The depth of the deposit at the mouth of the cave was 130 inches and at the back wall 14 inches (see Fig. 2).

The cave was first visited in April 1960 by Richard Shutler, Jr., William Wright, Jr., and William L. Simpson. Obsidian chips, scattered charcoal, and firehearths were observed on its surface. There was no evidence of any previous excavation or vandalism. A field party from the Nevada State Museum returned to the cave during the summer to excavate the site.

Trench A, 6 feet wide, was laid out across the total width of the mouth of the cave, outside the cave itself. Trenches B and C ran perpendicular to Trench A from the mouth of the cave to the back wall on either side of the centerline (see Fig. 2). All trenches were excavated to bedrock. The deposit was taken out in 6-inch levels and passed through a ¼-inch mesh screen. Soil samples and charcoal samples from firehearths were collected.

We should like to express our thanks to a number of people who assisted in the excavation of the site and the preparation of the report. First of all to Mr. Jack W. Campbell who gave us permission to excavate the cave. The authors were assisted in the excavations by Mr. William Brown III, Mr. Christopher Dove, Mr. Richard Massell, and Mrs. Frances Deglman. Mr. and Mrs. Lowell Martin and Mr. and Mrs. George Urdahl of Jarbidge extended to us innumerable courtesies for which we are most grateful. Mr. James W. Calhoun, Director of the Nevada State Museum, and Mrs. Calhoun visited the excavations and spent some days assisting us, as did Mr. William Wright, Jr. Alan E. Ziegler identified the mammal and bird remains from the site and Mr. Richard H. Brooks subjected them to further analysis. Dr. W. I. Follett identified the fish remains from the cave. Mr. Peter J. Herlan described the environment, and Mr. George M. Wilson the geology, of the area and of the cave deposits. Dr. Bruno E. Sabels contributed a study of the distribution of trace elements in the deposits. We are very grateful to be able to include the results of their studies as chapters in this report. Finally, we wish to thank our children, Kathryn and John Shutler, who cheerfully endured spending their summer vacation helping to screen and sort artifacts.

ENVIRONMENT

By Peter J. Herlan

Differing from the zonal forest types of the typical Great Basin ranges of Nevada (Toiyabe, Monitor, Wassuk), and from the Sierran ranges skirting the western boundaries of the State, the Jarbidge Mountains of northern Elko County show a modification of the Rocky Mountain zonal series.

The flora of this range shows much in common with the Humboldt and Ruby ranges of northeastern Elko County. Due to the geographical isolation of these ranges from the main Rocky Mountain system and as a result of direct contact from the south and west with Great Basin flora, a typical Rocky Mountain zonal series necessarily shows many modifications. Moreover, each of these ranges of northern Nevada will show differences peculiar to that particular range.

The Rocky Mountain zonal series in the ranges of northern Nevada, increasing with elevation, is as follows:

1. Piñon-Juniper Woodland: *Pinus monophylla,* Single-leaf Piñon; *Juniperus utahensis,* Utah Juniper; *J. scopulorum,* Rocky Mountain Juniper.

2. Ponderosa Pine Forest: *Pinus ponderosa,* Yellow Pine.

3. Douglas Fir-White Fir Zone: *Pseudotsuga menziesii,* Douglas Fir; *Abies concolor,* White Fir.

4. Spruce-Fir Sub-Alpine Forest: *Abies lasiocarpa,* Alpine Fir; *Picea engelmannii,* Engelmann Spruce; *Pinus flexilis,* Limber Pine; *Pinus aristata,* Bristlecone Pine.

In the Jarbidge Mountains, the Ponderosa Pine Forest is absent entirely. The Douglas Fir-White Fir Zone is absent as such, but is supplanted by almost pure stands of *Populus tremuloides,* Quaking Aspen. In this range, as in many of the Great Basin ranges to the south, life zones as recognized by Merriam show the Transition Zone to be nearly nonexistent with an enlarged Upper Sonoran Zone, changing into the Canadian Life Zone. A few Transition Zone indicators are found scattered into both upper and lower zones. The immediate vicinity of Deer Creek Cave shows a merging of the Piñon-Juniper Woodland, with its accompanying chaparral of *Artemisia,* sage brush; *Chrysothamnus,* rabbit brush; and *Pershia,* bitter brush; with the Spruce-Fir Sub-Alpine Forest. On the drier slopes occur *Amelanchier utahensis,* Utah serviceberry; *Sorbus scopulina,* mountain ash; and *Cercocarpus ledifolius,* mountain mahogany.

The watercourses of the area are bordered by *Populus angustifolia,* narrow-leaf cottonwood; *Alnus tenuifolia,* mountain alder; *Crataegus ribularis,* river hawthorn; and *Salix* sp., willows.

A list of the mammals of the Deer Creek Cave area includes the following: *Procyon lotor,* raccoon; *Mustela frenata,* weasel; *Mustela vison,* mink; *Mephitis mephitis,* striped skunk; *Taxidea taxus,* badger; *Canis latrans,* coyote; *Felis concolor,* mountain lion; *Lynx rufus,* bobcat; *Marmota flaviventer,* marmot; *Citellus lateralis,* golden-mantled ground squirrel; *Eutamias* sp., chipmunk; *Peromyscus maniculatis,* deer mouse; *Neotoma cinerea,* bushy-tailed wood rat; *Lepus californicus,* black-tailed jackrabbit; *Lepus townsendii,* white-tailed jackrabbit; *Sylvilagus nuttallii,* cottontail; *Onocoileus hemionus,* mule deer; and *Antilocapra americana,* antelope.

Climatic Data

The Jarbidge area has an annual precipitation of about 13 inches. This falls mainly as snow in the winter, which ranges in depth from 12–100 inches. The temperature varies from the 90's in the summer to below 20° in winter. The days are warm in summer, but not oppressive; the nights cool to cold. Frosts occur during every month of the year.

GEOLOGY OF DEER CREEK CAVE AND THE JARBIDGE AREA

By George M. Wilson

Deer Creek Cave is situated 4 miles north of Jarbidge (Shoshoni *Ja-Ha-Bich,* the Devil) at the confluence of Deer Creek and the Jarbidge River in the northern part of Elko County in northeastern Nevada. The cave lies within the southern periphery of the vast lava fields that make up the Columbia Plateau and the Jarbidge area includes the physiographic boundary between the Great Basin and the Columbia River drainage.

The geology of the area was first outlined by Sweetser (1910) and later amplified by Schrader (1912, 1923). Essentially, folded and eroded Paleozoic rocks have been tilted and intruded by a granitic mass, probably at the time of emplacement of the Sierra batholith and then covered by a series of volcanic flows during Tertiary time. Quaternary rocks include glacial and snowslide debris, stream gravels, and alluvium.

The oldest rocks exposed are undifferentiated Paleozoic sediments consisting of quartzites, limestones, and shales. A ledge of dense, greenish-gray quartzite with interposed siliceous green shales occurs in the Jarbidge mining area. A hand lens reveals the grains of sand that make up this former sandstone, fused by the temperature and pressure of burial. On the ridges west of Jarbidge are steeply dipping (70° N.), resistant outcrops of limestone, a carbonate rock laid down on the floor of an ancient sea at least 200 million years ago. The limestones vary in color from sugary white to a mottled greenish-gray. Some layers are dense and siliceous, others soft and crystalline, the uppermost exposure having a banded or finely stratified appearance upon weathering. It has long been known that ores occur along the contact between granite and limestone. Tungsten mines and prospect holes mark this contact along the eastern rim of Copper Basin.

A granitic mass, with associated dikes of granodiorite, has intruded the older layers of rock, faulting and tilting them. Erosion has removed the covering layers, exposing the granite which had cooled and solidified beneath the surface of the earth. The granite has been described in the literature as a gray, coarsely crystalline hornblende granite of Cretaceous age but in all the specimens collected, biotite (black mica) predominated over hornblende, properly defining the rock as a biotite granite.

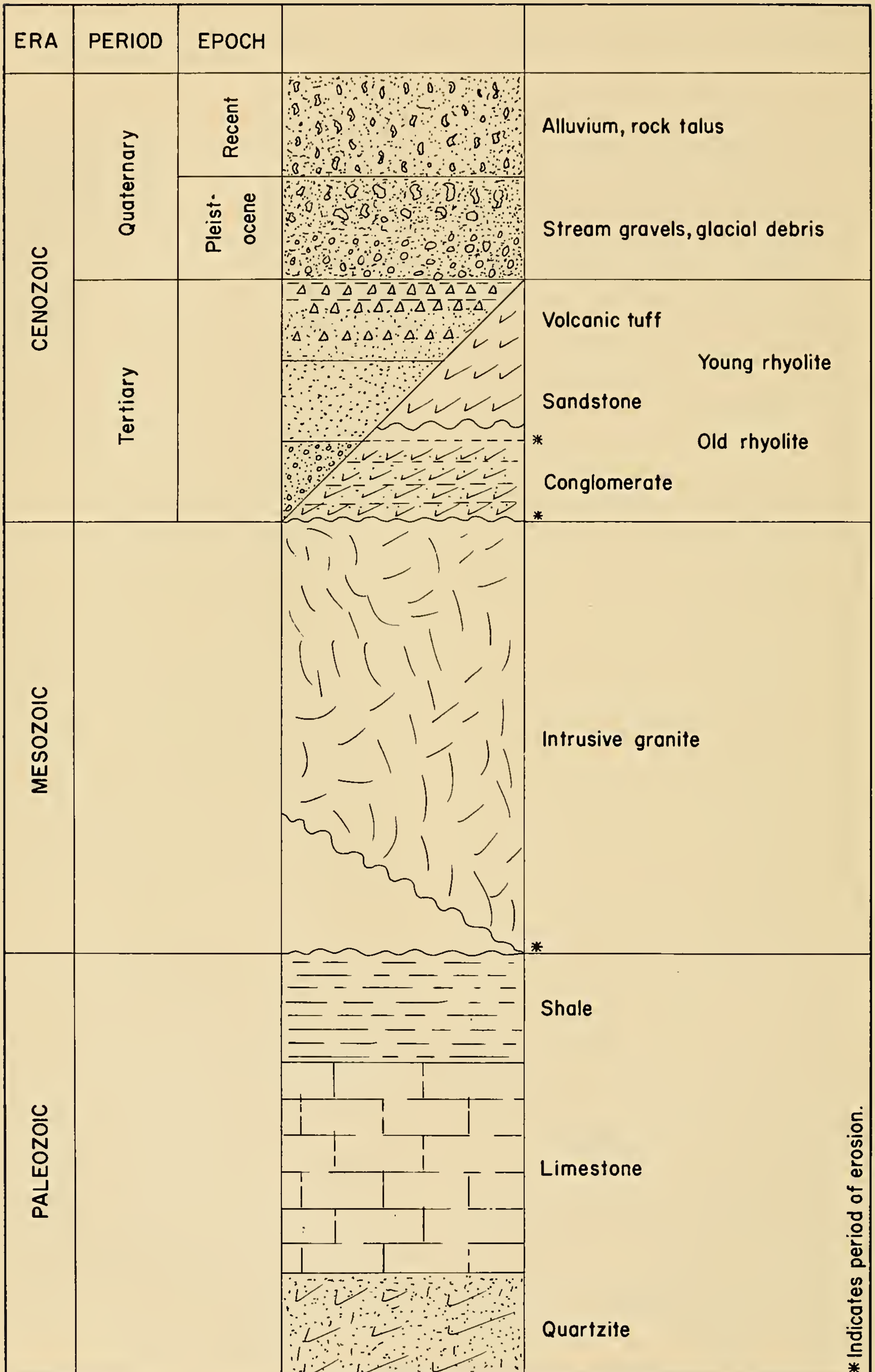
Tertiary volcanic flows followed the intrusion, deformation and erosion of the Paleozoic strata. The lavas were extruded in two epochs separated by a long interval of erosion. The older series of flows (about 6,000 feet thick) are mostly purplish-gray rhyolites composed of a spherulitic groundmass containing irregular phenocrysts of altered feldspar (orthoclase) and reddish, glassy quartz. Rhyolites are mineralogically equivalent to granites but are very fine-grained or glassy due to rapid cooling after the molten mass was forced out upon the surface of the earth. The older flows include black and brown obsidian (the extreme glassy form of granite), volcanic breccia, tuff (ash), and other ejecta (bombs and lapilli). They exhibit flow-banding, vesicular structure and columnar jointing. The younger rhyolites (1,000–2,000 feet thick) were more fluid (thinner flows) and are reddish-purple in color, fine-grained and homogeneous.

A well-exposed section (about 500 feet thick) of Tertiary sediments occurs along Wickiup Creek near its junction with the Bruneau River. A basal conglomerate unconformably overlies the eroded surface of the granite. It contains fine to coarse, moderately rounded boulders and pebbles of quartzite and volcanic rocks held in a highly siliceous matrix. The conglomerate is overlain by a light gray, friable sandstone composed of quartz and fragments of clear volcanic glass. A large section of opalized wood was found in the upper layers, which grade into a greenish-gray altered tuff with shaly partings. The uppermost layer is dark gray and very dense, possibly due to resilicification. Quaternary rocks in the Jarbidge area are mostly stream gravels and alluviam talus debris, and glacial and snowslide deposits (see Fig. 3).

PETROGRAPHY

Cave deposits are unique owing to their method of accumulation and protective environment. They do not fall within the classification of soils because they lack the specific characteristic essentials to soils as defined by the Soil Survey Staff (Soil Conservation Service). They are essentially sedimentary deposits and should be analyzed as such by methods unique to the science of petrology, or more specifically, petrography, the purely descriptive aspect of petrology. Petrographic analyses of archaeological deposits can provide information concerning their nature, provenience, mode of transport, and rate of deposition. Supported by chemical and pollen studies, they can be indicative of past climate and human occupation.

FIGURE-3 STRATIGRAPHIC SECTION OF THE JARBIDGE AREA



The method of analysis consisted of microscopic examination of the dry sample, examination after elutriation, and finally, examination after treatment with dilute hydrochloric acid and elutriation (a method of grade separation preferable to seive analysis in this case). Grade separation in all samples was fairly well defined, falling into two major fractions, coarse and fine. A heavy mineral analysis was not justified because significant amounts of that species were lacking. The pH (acidity-alkalinity) of the samples was determined by Vincent Vitale, U.S. Bureau of Mines, Reno. A geochemical study of the manganese concentration in the cave samples was performed in 1960 by Bruno E. Sabels (Desert Research Institute, Reno) and a revised graph from the report (unpublished) is included for comparison (see Fig. 4).

DEER CREEK CAVE—PIT 2, TRENCH B

Sample No. 1 (398 and 399)—Depth 0–6″—pH 7.8— (These samples were properly treated as one sample representative of the upper six inches.)

Dark yellowish-brown (Munsell color system, dry), poorly sorted coarse to fine gravel, sand, silt, and organic matter including bone fragments, animal excreta, plant debris, and charcoal. The coarse fraction consists of angular fragments of tufa and pebbles of mottled, brownish-gray rhyolite breccia exhibiting flow-banding with reddish-brown phenocrysts of feldspar and reddish-orange quartz. This material is obviously rock fall from cave roof and walls. The fine fraction of the sediment is masked by impure tufa ($CaCO_3$) crystallization.

Sample No. 2 (400)—Depth 6–12″—pH 8.0

Dark yellowish-brown gravel, sand, silt, and organic matter similar to the above sample with less coarse material and fewer bone and plant fragments. Some of the bone fragments are charred and obsidian flakes are present. The finer portion is obscured by tufa crystals and dust.

Sample No. 3 (401)—Depth 12–18″—pH 9.2

Dark reddish-brown fine to medium poorly sorted gravel, sand, silt, and much less organic matter, mostly charcoal. Treatment with dilute HCL removed the carbonates revealing mostly volcanic rock fragments (rhyolite and rhyolite breccia), volcanic glass (white, red, and black), quartz (crystals), chert, chalcedony, opal, gypsum, mica, and some dark minerals. The predominance and angularity of the rhyolite fragments indicates rockfall from the cave as the major source of the material. The angularity of the other minerals points to minimal transport from sources nearby. The variety of chert and obsidian undoubtedly come from the working of points and tools of the same material. The tufa, of course, is a product of the ground waters that percolated through the cave deposit at various times.

Sample No. 4 (402)—Depth 18–24″—pH 8.8

Dark yellowish-brown fine to medium poorly sorted gravel, sand, silt, and less organic matter, mostly charcoal with some charred and uncharred bone fragments. The pebbles consisted mostly of cave rock debris, dark grayish-green andesite (?) and volcanic tuff. The sand and silt is mainly rhyolite, andesite (?), milky, clear, and reddish quartz, feldspars, chert, opal, chalcedony, obsidian, and some dark minerals. The fragments foreign to the cave are moderately rounded indicating transport from more distant sources. Occupation indicated.

Sample No. 5 (403)—Depth 24–30″—pH 8.4

Light grayish-brown fine to medium poorly sorted gravel, sand, silt, and organic matter, mostly charcoal. Same as No. 4 with more charcoal, andesite (?), and dark minerals.

Sample No. 6 (404)—Depth 30–36″—pH 8.8

Pale brown fine to medium poorly sorted sand and silt with less organic matter, some pebbles of angular rhyolite breccia and andesite (?). The sand consists of volcanic rock and glass, slightly rounded quartz, obsidian, chalcedony, opal, mica, and some moderately rounded dark minerals. Very similar to No. 4.

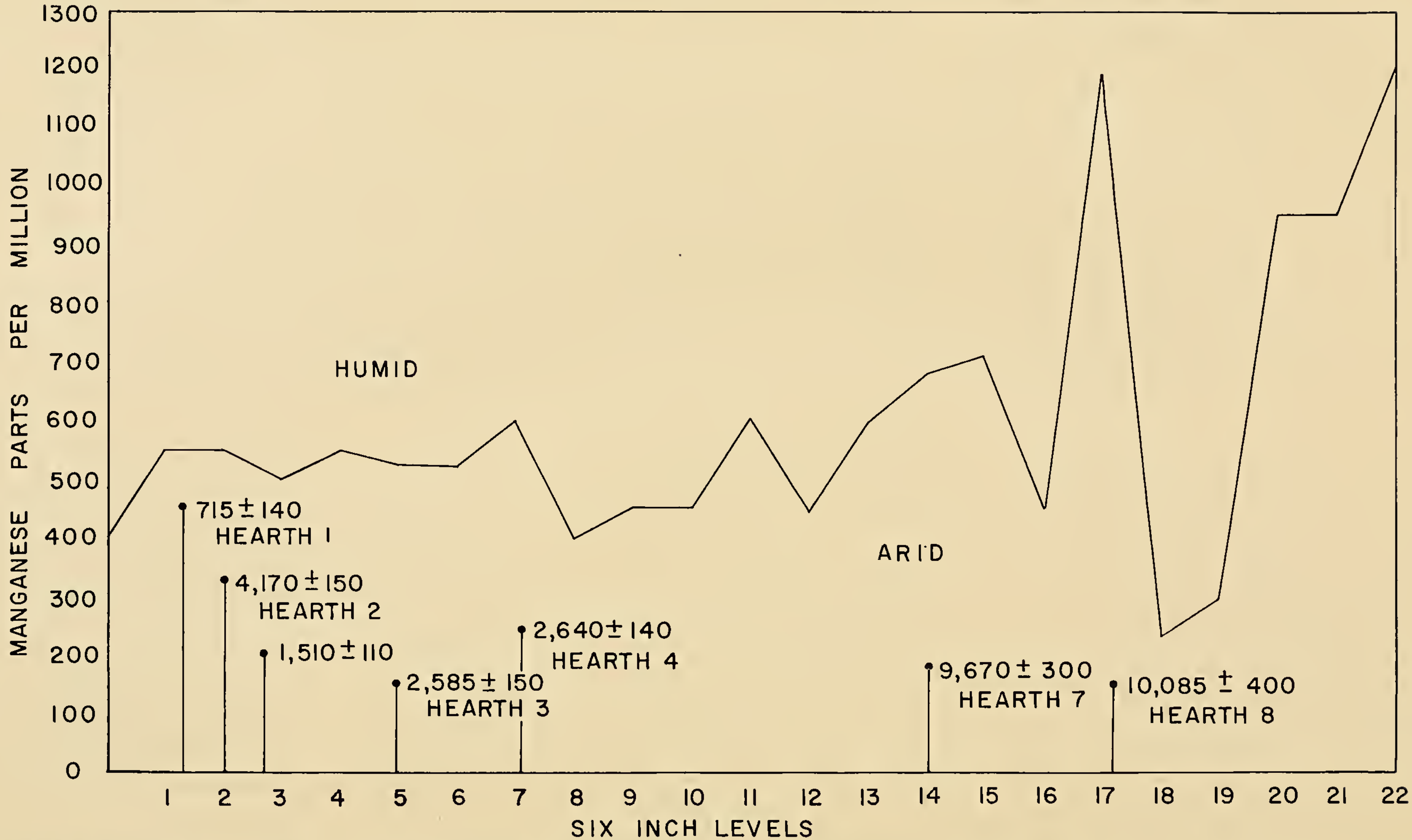
Sample No. 7 (405)—Depth 36–42″—pH 8.8

Brownish-gray fine to coarse gravel, sand, and silt, poorly sorted with much charred and uncharred bone and charcoal. Angular pebbles of reddish-orange rhyolite and rhyolite breccia, andesite (?), and tuff. The sand fraction consists of reddish-orange rhyolite (oxidized by fire?) and greenish-gray andesite (?), Volcanic glass, quartz, mica, obsidian, and calcite.

Sample No. 8 (406)—Depth 42–48″—pH 8.4

Dark yellowish-brown fine to medium poorly sorted gravel, sand, and silt with less organic matter. The pebbles are rhyolite and andesite (?), the sand predominantly volcanic rock fragments, volcanic glass, quartz, bone fragments, fossilized wood (Tertiary sediments in Wickiup Canyon are known to contain fossilized wood), obsidian, chalcedony, mica, and some dark minerals, probably pyroxenes and magnetite. Ground water percolation indicated.

FIG. 4, DEER CREEK CAVE SOILS



MANGANESE PARTS PER MILLION AND RADIOCARBON DATES BY 6" LEVELS

Sample No. 9 (407)—Depth 48–54″—pH 8.8

Dark yellowish-brown sediment similar to No. 8, with less andesite (?) fragments, no evidence of fossilized wood, bone fragments and obsidian very sparse.

Sample No. 10 (408)—Depth 54–60″—pH 9.2

Dark yellowish-brown, same as No. 9 with more bone fragments and lighter volcanic rocks predominating.

Sample No. 11 (409)—Depth 60–66″—pH 8.8

Pale brownish-gray fine to medium poorly sorted gravel, sand, and silt with organic material. The coarse fraction consists of pebbles of angular rhyolite and subangular andesite (?). Organic matter is mostly charcoal with some plant debris and very few bone fragments. The fines consist mostly of angular rhyolite, some subangular and rounded andesite (?), volcanic glass, volcanic tuff, quartz, gypsum, obsidian, chert, opal, mica, magnetite, and pyroxenes.

Sample No. 12 (410)—Depth 66–72″—pH 8.8

Pale brown fine to coarse poorly sorted gravel, sand, and silt with charcoal and a few bone fragments (charred). The fines consist of mostly angular rhyolite, andesite (?), quartz, volcanic glass, obsidian, calcite, fossilized wood.

Sample No. 13 (411)—Depth 72–78″—pH 8.8

Pale brownish-gray fine to coarse poorly sorted material similar to No. 12, with olivine basalt (?) and much less charcoal and bone. The fines are mostly rhyolite fragments, feldspars, quartz, volcanic glass, mica, magnetite, and pyroxene.

Sample No. 14 (412)—Depth 78–84″—pH 8.4

Pale brown fine to coarse material, some fire darkened; more charcoal, bones (charred and uncharred), and plant debris. Very angular cave rock *only*. Quartz, glass, glassy andesite (?) (tool chip), chert, obsidian, some mica, no foreign rocks.

Sample No. 15 (413)—Depth 84–90″—pH 8.4

Pale brown mostly coarse material. Almost entirely angular rhyolite (cave debris). Charcoal and bones almost nil. Little effervescence.

Sample No. 16 (414)—Depth 90–96″—pH 7.8

Identical cave debris, no charcoal or bone material. Several filaments of fine white hair (animal).

Sample No. 17 (415)—Depth 96–102″—pH 8.0

Grayish-brown fine to coarse sediment, charcoal, some charred bone and burnt cave rock.

Sample No. 18 (416)—Depth 102–108″—pH 7.3

Pale yellowish-brown fine to coarse sediment (product of weathered cave material entirely), no charcoal or bone material.

Sample No. 19 (417)—Depth 108–114″—pH 7.5

Identical, same level.

Sample No. 20 (418)—Depth 114–120″—pH 7.3

Identical, same level, material slightly coarser with traces of charcoal.

Sample No. 21 (419)—Depth 120–126″—pH 7.3

Identical.

Sample No. 22 (420)—Depth 126–130″—pH 7.3

Identical.

Analysis of the soil samples indicate that the cave was formed during a period of waning alpine glaciation synchronous with the last stage of continental glaciation (Wisconsin) sometime before 11,000 B.P. Ice-plucking and frost-wedging were probably the principal agents responsible for its formation at that time. It was first occupied sometime later, about 8,000 B.C., during a time of a humid climate. This is indicated in Figure 4, with the high parts per million of manganese indicated at 10,000 years and before. Ground water continued to percolate through the cave deposit with varying intensity throughout the period of occupation by man. This is shown in Figure 4, with a vacillating, but progressive, desiccation of the climate in the area. Groundwater percolation is heavy below the 120-inch level in the cave today.

UNMODIFIED MAMMAL AND BIRD REMAINS FROM DEER CREEK CAVE, ELKO COUNTY, NEVADA

By Alan C. Ziegler
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MATERIAL AND METHODS

The unmodified animal bone material excavated from Deer Creek Cave comprises 80 lots segregated as to pit or cut, trench, and level. In addition there is one lot from Pit 1, Trench B, containing material from an unspecified level or levels. Most lots represent material from a vertical span of 6 inches, although for a few the distance may be as great as 36 inches. The material was originally sifted out by means of a ¼-inch mesh screen; the human skeletal material, artifacts, plant material, and a small number of fish bones were then removed to form the bases of separate reports. There were no reptile or amphibian bones present. Only about 50 of the remaining bone fragments can be identified as bird, and approximately 20 of these apparently represent the partial remains of a single very large individual. No attempt has been made to identify the avian material but the locations of occurrence are noted in Figure 1.

Mammalian bone, almost entirely in a fragmentary condition, makes up the rest of the material. All fragments considered identifiable as to skeletal element represented were first segregated and individually numbered. A sample of 14 lots chosen at random from the whole collection shows the average ratio, by weight, of this numbered component to the remaining portion to be 1:1.7. Many of these numbered fragments could then be identified to genus or species; those that could not were assigned to such categories as "artiodactyl," and "small to medium mammal." The majority of the unnumbered bone fragments seem almost certainly to represent finely split and broken "long bones" of artiodactyls but by present methods there is no way of demonstrating this conclusively.

In general, lots from the deepest levels contain the fewest fragments; those from intermediate levels, the most. Charred and split bones are present at every level and in almost every lot. Only 23 fragments (representing at least 5 species) out of over 1,000 identified represent juvenile animals and, as far as may be judged from bones and teeth, still fewer belonged to senile individuals. For every genus recorded by more than a dozen or so fragments, there are enough parts of the entire skeleton represented to show that the animals were brought to the cave intact, or essentially so * * * presumably, then, from no more than a few miles distance. Also, there is no evidence that either side or any particular part of the body predominates in the deposit as might be expected if certain religious rites were practiced in regard to the animals taken.

The author is indebted to Drs. Alden H. Miller and Seth B. Benson of the Museum of Vertebrate Zoology, Berkeley, California, for making available the extensive skeletal collection and other facilities of the museum. Dr. Miller carefully read and criticized the manuscript.

SPECIES PRESENT

Most of the bones are referable to species either still living in the area today or recorded as occurring there during historic times, while the remaining forms all may now be found within at least 100 miles.

In the following accounts the names and arrangement of genera follow Simpson (1945), while specific and vernacular names are those of Hall and Kelson (1959). Hall (1946) and Davis (1939) have been extensively consulted for information on the natural history and distribution of the mammals concerned. Borell and Ellis (1934) give a good description of many natural aspects of a mountainous area in south-central Elko County, Nevada, similar to the Jarbidge Mountains near Deer Creek Cave.

The life zones referred to are those of C. Hart Merriam, and although they are discussed in some detail for Nevada by Hall (*op. cit.*: 34–43), a brief sketch of them might prove convenient here. The six zones were originally based on arbitrary altitudinal bands of progressively colder mean temperatures for a certain portion of the year, but in practice they are generally recognized by "indicator" species of plants and animals which happen to be more or less restricted to a particular life zone. Lower Sonoran is chiefly the typical "low desert" with creosote bush, and in Nevada is encountered only in the southern quarter of the State. The Upper Sonoran occupies almost all the rest of Nevada. It is the piñon-juniper and sagebrush belt in which commonly occurs the pygmy rabbit *(Sylvilagus idahoensis)*. In some mountainous areas of the State a Transition Life-zone may be found to lie between the Upper Sonoran and the Canadian, although in many localities, the Jarbidge Mountains for instance, this zone is interrupted or practically absent. Few mammals are restricted to it, but yellow pine and mountain mahogany are characteristic plants. The Canadian and the two remaining higher life zones are found on many of the high mountain ranges of the State. Spruce-fir and aspen are typical Canadian plant forms, and the marten *(Martes americana)* is one of the indicator mammals. The Hudsonian Zone features subalpine type vegetation including bristlecone pine. The alpine-arctic is above timberline and nearly all of the low-growing plants present, such as *Polemonium confertum,* extend down into the Hudsonian. No mammal is restricted to either or both of these latter two life-zones.

Pika *(Ochotona princeps).* Five fragments of the skull and one of the innominate of this species occurs in Pits 1 and 2 below the 84-inch level. At least two and probably three individuals are represented. The large proportion of skull fragments is surprising but may be due to chance in view of the small total number present. It may also be that since this and the pocket gopher (*Thomomys* sp.) are the two smallest species present, a few parts of postcranial bones of both passed unnoticed through the screen in the initial sifting process.

Ochotana is absent in the area today but occurs on several isolated mountain ranges in Nevada, the nearest being that part of the Ruby Mountains about 60 miles to the south. It is primarily a form of the Transition through the Hudsonian and is invariably restricted to talus slopes or rock piles.

Jackrabbit *(Lepus* sp.*).* This genus occurs sparingly in Pits 1 and 2 from the 24–126-inch level. The large size of all the remains precludes the possibility of them being the snowshoe rabbit *(L. americanus).* Either, or possibly both, white-tailed *(L. townsendi)* or black-tailed *(L. californicus)* jackrabbit are represented, and both are currently present in the general area. The former ranges from mid-Transition through Hudsonian, and the latter occurs in Lower and Upper Sonoran.

Pygmy rabbit *(Sylvilagus idahoensis).* This small Upper Sonoran species is represented by only a fragment of a tibia from the 42–48-inch level of Pit 1, Trench C. It is a moderately common animal in sagebrush areas and seemingly would have been taken regularly by Indians if they had hunted extensively there.

Cottontail *(Sylvilagus* cf. *nuttalli).* Five limb bone fragments of a large form of this genus appear in the material; four of them from Pits 1 and 2 between 54 and 84 inches, and the remaining one from Pit 5, 0–36 inches. Although a specific determination cannot be made from the material it is all referred on geographic grounds to the common cottontail of the region today, which ranges zonally from Upper Sonoran through Canadian, rather than to *S. auduboni,* a primarily desert form of southern Nevada.

Marmot *(Marmota* cf. *flaviventris).* This large rock-dwelling rodent appears in several of the pits and occurs from the surface down to a depth of 120 inches. It is second only to mountain sheep *(Ovis canadensis)* in number of fragments present. The material indicates a form which, although large, is apparently still within the size range of the living marmot of much of Idaho and Nevada, and it is here referred to that species. However, Hall (1964: 282–284) discusses the former more southern distribution of *flaviventris* in the western United States, and it may possibly be that the slightly larger species *caligata* of the Bitterroot and Salmon River mountains of east-central Idaho, likewise, possessed a more extensive southern range which could have placed it in the Deer Creek area. Because of insufficient comparative skeletal material from the areas involved, as well as lack of complete bones and crania in the deposit, the possibility of the presence of this second species cannot be definitely eliminated.

Flaviventris is more characteristic of the Transition and Canadian Life-zones than of the Upper Sonoran, and it even extends into the Hudsonian. *Caligata* would presumably indicate still higher general zonation of the area. In this mountainous area marmots may be expected to hibernate from at least September through February, and thus are not available for hunting in this period.

Ground squirrel *(Citellus* sp.*).* This genus appears sporadically at levels from 12–120 inches in Pits 1 and 2. Twelve fragments are present, but these include one group of four and a second group of five closely associated whole bones or pieces. Each group very likely represents a single animal, thus indicating a small or total number of individuals present than would be suggested by the same number of bones found scattered through widely separated levels. Groups of associated bones such as these are very rare in the cave, and either of these occurrences may indicate an animal that died of natural causes, perhaps in a burrow, rather than one that was used for food.

A relatively large species, either *C. beldingi* or the osteologically similar *C. richardsoni,* is indicated by all the material. Both are burrow-living, and are forms typically found in meadowland rather than in sagebrush flats or dense forest. *Beldingi* occurs primarily from Transition through Hudsonian while *richardsoni* is exclusively Upper Sonoran. Both hibernate during the same period as *Marmota.*

Pocket gopher (*Thomomys* sp.). The distal portion of a mandible and the middle section of an innominate of this fossorial genus were found at the 54–60-inch level of Pit 2, Trench B. Among Nevadan gophers these fragments represent one of the three smaller species rather than the larger, Upper Sonoran, *T. townsendi. Talpoides* is the form occurring in the area today. Its zonal distribution extends from higher parts of the Upper Sonoran through the Hudsonian.

Beaver *(Castor canadensis).* A proximal radial fragment from 6–12 inches in Pit 1, Trench B, and an ungual phalanx of the pes from 78–84 inches in Pit 2, Trench B, are the sole evidence of this large semi-aquatic rodent. Streams in this portion of northern Nevada and southern Idaho yielded rich harvests of beaver pelts during the early part of the 19th century, and the animals are still common in many parts of the area today.

Beaver occur from the lowest life zone to the middle of the Canadian, but within this range require permanent watercourses with a nearby supply of deciduous trees such as willow, cottonwood, or aspen. They often occur in colonies and are active all year, although during the winter they remain under the ice or in their lodges or bank burrows.

Bushy-tailed wood rat *(Neotoma cinerea).* This species appears in Pits 1, 2, and 5 from the surface to a depth of 126 inches. Also, an essentially intact cranium of an animal probably dead only a few years occurs in Cut 2, Trench A—apparently taken from the surface. In respect to total number of fragments, this rat is the fourth most common identifiable species in the accumulation. Among the mammals appearing more than once in the deposit, *Neotoma* and *Ochotona* are the only ones whose remains are commoner in the lower levels than in the intermediate or upper levels.

The large size of the bones clearly indicates *cinerea* which is characteristic of the Transition, Canadian, and Hudsonian life zones rather than to *lepida* of the Lower and Upper Sonoran. The bushy-tailed wood rat is found in various types of habitat but exhibits a preference for rocky areas. It is often found nesting in and around caves and is active throughout the year.

Porcupine *(Erethizon dorsatum).* This animal appears with regularity in several of the pits from near the surface down to 126 inches. It follows *Ovis* and *Marmota* in number of fragments identifiable at least to genus. The zonal range is, sparingly, throughout the Upper Sonoran and, commonly, from the Transition through the Hudsonian. The usual habitat is a coniferous forest area with talus or other rocky areas suitable for dens close at hand. Hall (1964: 1946–50) reports that above the latitudinal level of about the southern third of Nevada the porcupine is never present in treeless areas. This large slow-moving species is common in suitable areas in northern Nevada today, is active the year around, and is easily taken by man.

Large rodent. Two slivers of incisors, too fragmentary for generic identification, were taken from Pit 2; one of them at 42–48 inches in Trench B, the other at 126–130 inches in (combined) Trench B and C. The fragments belong to an animal in the size range of *Erethizon, Marmota* and *Castor.*

Domestic dog, coyote and wolf (?) *(Canis).* Only eight fragments representing this genus occur in the collection; two in a lot from an unspecified level of Pit 1, Trench B, and the remainder all from depths shallower than 36 inches in several of the pits and trenches. Two of the bones are from a type of domestic dog *(C. familiaris)* with skull and teeth about the size of those of a Sealyham terrier. These were taken from Pit 4, 0–36 inches. One of them is a relatively complete right mandible too short and curved for coyote *(C. latrans)* while the other is a left maxillary fragment with Pm^4 and M^1, obviously smaller than the corresponding skull portion of the wild canid. When the two fragments are compared with *familiaris* crania and mandibles known to be correctly associated, the maxillary fragment appears slightly too small to be the proper match for the mandible, suggesting that two individuals of the domestic species are represented.

A fragmentary middle section of a right mandible found at 12–18 inches in Pit 1, Trench C appears straighter than that of any domestic dog of equivalent size and is therefore referred to coyote. The distal end of a left femur from 24–30 inches of Pit 1, Trench B, and both the proximal portion of a (different?) left femur and the distal half of a metapodial from the unknown level lot of Pit 1, Trench B, are of typical coyote configuration and size, but the possibility of domestic dog cannot be ruled out in the case of these fragmentary limb bones.

The middle portion of a very large left third metacarpal at 0–12 inches in Pit 2, Trench B, and an equally robust proximal portion of left radius from 0–24 inches of Cut 2, Trench A, are thought to represent wolf *(C. lupus).*

The coyote is a relatively common animal in the area today and ranges equally through all life zones, occupying almost all major habitats within each. The wolf is probably now extinct in the same area but old records of occurrence suggest that it was once a wide-spread, although never common, animal of northern Nevada and southern Idaho. The extremes of its zonal range are only slightly less than those of the coyote but the few records available from Nevada indicate a preference for the Upper Sonoran and Transition Life-zones.

Grizzly bear *(Ursus horribilis).* The root and partial crown of a splintered left (?) upper canine of an adult bear appears in Pit 1, Trench C, at the 54–60-inch level. On the basis of size it is attributable to this species rather than to the smaller black bear *(U. americanus).* The root portion has not been pierced as might have been the case had the tooth been strung for ornamentation.

Hall (1946: 175) reports lack of any knowledge of grizzlies ever occurring in Nevada, but Davis (1939: 127) states that they were formerly widespread in Idaho, now being restricted to the central portion of that state. This very large carnivore may den up for short periods during severe winters, but otherwise is active all year. It has been reported to occur at least from the Upper Sonoran through Canadian life zones.

Marten *(Martes americana).* A substantial portion of the middle and proximal end of a right tibia belonging to this species appears in Pit 2, Trench C, at the 84- to 90-inch level. Martens have apparently been absent during historic times from all parts of Nevada except the Sierran belt along the extreme west-central border of the State. The closest known population occurs in central Idaho about 150 miles to the north of Deer Creek Cave. This relatively small carnivore is active all year and inhabits coniferous forests and nearby talus slopes or boulder fields of the Canadian and Hudsonian Life-zones.

Bobcat *(Felis rufus).* This medium-sized carnivore appears occasionally in Pits 1 and 2 and Cuts 2 and 3 from the surface down to 114 inches. Four of the nine fragments are from 18 inches or shallower. None of the bones present is large enough to be assigned to the lynx *(F. canadensis)*, of which there is at least one recent record for northern Nevada. The bobcat is most commonly found in the Upper Sonoran and Transition Life-zones, but ranges down through the Lower Sonoran and up into part of the Canadian. It shows a preference for rocky areas throughout its zonal range and usually occupies a den in caves or rock fissures.

Deer (*Odocoileus* sp.). An occipital fragment from 0–6 inches in Pit 1, Trench B, and an intact pisiform from 54–60 inches in Pit 1, Trench C, are the only certain evidence of this genus in the cave. The species represented cannot be determined from this material. The mule deer *(O. hemionus)* is the form occurring in the area today, although the white-tailed deer *(O. virginianus)* is found in northwestern Nevada and also in southeastern Idaho and may have ranged into the Deer Creek area at some times in the past. Except in local areas of these states where hunting or sheep farming have reduced their numbers, mule deer occur, often commonly, in the foothill and mountain regions and have done so for at least the past 75 or 100 years. Zonal range is from higher parts of the Upper Sonoran through the Hudsonian although the animals move down from higher exposed areas to sheltered valleys in the Upper Sonoran Zone during the winter.

Deer or wapiti (*Odocoileus* sp. or *Cervus canadensis*). A fragment of antler belonging to one of these two animals was found at the 48–54-inch level of Pit 1, Trench C. Wapiti were recorded a little over a century ago in far east-central Nevada but have not been reported since in the State. They were apparently a little more common over much of Idaho, exclusive of the desert regions, but now occur naturally only in parts of the mountainous central area. In Nevada the wapiti's zonal range was probably Transition in the summer and Upper Sonoran in the winter.

Pronghorn *(Antilocapra americana).* An unworn lower third milk premolar of an animal less than one month old appears in the lot of unknown depth from Pit 1, Trench B. The month of death of this individual was probably May or June. Pronghorns were common on the Upper Sonoran plains before settlers moved into Nevada and Idaho but now have been greatly reduced in numbers over all of their former range. The animals may be found down through the Lower Sonoran and up through the Transition, but everywhere they avoid mountainous and broken terrain such as that favored by mountain sheep *(Ovis canadensis).*

Pronghorn or deer (*Antilocapra americana* or *Odocoileus* sp.). A sliver from the proximal end of a metacarpal found at 36–48 inches in Cut 3, Trench A, is referable to one of these forms. Not enough of the articular surface is present clearly to assign it to either genus although it seems closest to *Antilocapra.* It is definitely neither mountain sheep nor wapiti *(Cervus).* The fragment is worn and scratched and may prove to be part of an artifact.

Bison or domestic cow *(Bison bison* or *Bos taurus).* Two bone fragments of an artiodactyl larger than *(Cervus)* are present. One is part of a rib head from 36–42 inches in Pit 2, Trench B, and the other is a fragment of ilium from 0–10½ inches in Pit 7. Apparently there is no historical record of bison occurring in Nevada although they were abundant in the plains areas of southern Idaho in the early nineteenth century, and doubtless then extended south into parts of northern Nevada. They seem to have become extinct in Idaho about 100 years ago.

Mountain sheep *(Ovis canadensis).* Remains of this genus appear at every level and in all cuts and pits except Pit 7 although they are scarce below about the 102-inch level. In terms of total number of fragments present *Ovis* is by far the commonest identifiable genus. Domestic sheep *(O. aries)*, if present, would not be distinguishable on the basis of the present fragmentary material. An interesting specimen appearing at the 96–102-inch level of Pit 1, Trench B–C, is a tooth identified as the right upper canine of *O. canadensis*. It matches almost exactly the corresponding tooth in a mountain sheep cranium preserved in the Museum of Vertebrate Zoology (No. 10593). Benson (1943) figures the museum specimen and reports evidence of upper canines in only 2 out of 53 crania of this species in the Museum's collection. He found none in 10 crania of the domestic species.

Mountain sheep were common in northern Nevada and southern Idaho before 1900 but have gradually disappeared from the area. The last record for Elko County, Nevada, is 1921 (Borell and Ellis, 1934: 43) in the Ruby Mountains from 50 to 100 miles south of Deer Creek Cave. This species may range through all life zones but in Nevada it tends to be more common in the Upper Sonoran. Whatever the zone, the preferred habitat is rocky and precipitous cliffs and slopes. There is some degree of altitudinal migration especially in years of heavy snowfall.

The mountain sheep lives in a habitat where water is often scarce in the summer and it makes regular trips to the few spring or water holes where it may easily be taken by concealed hunters.

Artiodactyl. This category is comprised of medium-sized members of this order in the size range of *Ovis, Odocoileus* and *Antilocapra*. The vertical distribution of the fragments in the various pits and cuts parallels that of *Ovis canadensis* fairly closely, and since identifiable remains of *Odocoileus* and *Antilocapra* are extremely scarce almost all of this material may probably safely be considered as belonging to *Ovis*. Between one-third and one-half of the fragments are parts of the high-crowned cheek teeth characteristic of the genera *Ovis* and *Antilocapra* and are definitely not those of the low-crowned teeth of *Odocoileus*.

Small to medium mammal. This group includes all unidentifiable fragments of forms in the size range of *Neotoma* to about *Marmota*. In this and the following two categories many of the fragments are of ribs and vertebrae.

Medium to large mammal. The size range is *Erethizon* to *Canis* or slightly larger.

Large mammal. The mammals which could possibly be represented are *Ovis, Odocoileus, Antilocapra, Cervus* and *Ursus*. For the same reasons as discussed under the category "artiodactyl," above, most of this material also probably represents *Ovis canadensis*.

Very large mammal. A single fragment of humerus (probably from 0–36 inches in Pit 4 is so large it must represent either horse *(Equus caballus)*, bison, or domestic cow. If horse, it presumably would be an introduced breed rather than an extinct North American form.

Bird. All of the material is unidentified although several forms of various sizes are obviously present. Fragments are absent below the 96-inch level and scarce from 12 inches to the surface, but in the remaining levels they are relatively common. Most of the fragments represent broken limb bones and several show evidence of fire.

DISCUSSION AND CONCLUSIONS

Food Species

All the species of mammals present in the cave are of large enough size to be considered at least occasional food items for the cave people and, with the exception of some remains of *Citellus*, none of the skeletal material seems to have originally entered the deposit in an articulated condition. Rodent tooth marks are present on only a few of the bone fragments and there is no unmistakable evidence of gnawing by larger mammals. For most of the forms appearing commonly in the deposit there are at least some charred and broken or split bones, a circumstance that strenthens the supposition that most animals present were used for food. The virtual absence of young animals suggests that there was no well-established practice of domestication.

In most instances, the fragmentary condition of bones prevents any estimation of the numbers of individuals represented. However, it seems quite reasonable to assume that the larger the number of fragments of a particular species present the more important that animal was as a food item. Larger species thus used would have left a greater number of identifiable pieces of bone than the smaller, but the larger would also have provided a correspondingly greater amount of edible material.

If the total number of fragments, irrespective of distribution in depth, of each identifiable genus are considered, it is seen that five mammals occur quite frequently and form a group well set off from the remaining, less common, ones. This group is:

Ovis (157 fragments)
Marmota (59 fragments)
Erethizon (49 fragments)
Neotoma (28 fragments)
Lepus (21 fragments)

"Bird," with 52 fragments, perhaps may be considered as a collective common form also. For all members of this group except *Neotoma* there are, in general, a higher number of fragments per level in the section between approximately 30 and 80 or 90 inches than in the upper or lower portions of the deposit. The reason for the higher number is not known. Perhaps it indicates either a period of relatively more continual use of the cave, or the simultaneous presence of more occupants during the time span represented than at any time before or after.

The method of considering only the total number of fragments drawn from all levels, however, obscures significant changes in the relative frequency standing of genera that take place at about the 100-inch level. The frequency order listed previously holds true for the levels from this depth to near the surface, but from 100 inches down to the base of the deposit the composition and order within the group differs. If the 96–102-inch level is more or less arbitrarily selected to represent the upper limit of the lower portion of the accumulation, the six commonest animals present are:

Ovis (7 fragments)
Neotoma (7 fragments)
Erethizon (4 fragments)
Ochotona (4 fragments)
Marmota (3 fragments)
Lepus (3 fragments)

There are also three fragments of *Citellus*, but as mentioned earlier these are believed to represent a natural intrusion. Birds are entirely absent but begin to appear commonly immediately above this level.

Some rather unusual patterns of species distribution are displayed by levels near the surface. For example, *Lepus* abruptly disappears above 24 inches, whereas *Canis* material occurs only above 36 inches. This section has perhaps recently been disturbed to some degree by Whites, and in addition doubtless possesses remains of animals whose presence in the cave is due to natural causes rather than to agencies of the original human occupants, so should not be relied upon too heavily to represent a normal accumulation of food refuse. The appearance of wolf and bobcat remains primarily near the surface may indicate that these animals utilized the cave as a den at various times following the last period of human occupancy. These upper levels show evidence of white settlers in the area. This evidence consists of the occurrence exclusively of domestic dog in this section of this deposit (Pit 4, 0–36 inches) and the presence of possible horse or domestic cow at the same location. The bison or domestic cow fragment from 0–10½ inches in Pit 7 may easily be the domesticated animal, but the specimen from Pit 2, Trench B, at 36–42 inches, unless intrusive, seems more likely at this depth to represent bison and therefore a possible food item.

The faunal remains, then, indicate a change in frequency of the types of animals utilized for food through the time of occupancy of the site. Smaller mammals such as *Neotoma* and *Ochotona* were of some degree of importance compared to *Ovis* in the diet in earlier times. In later times birds appeared in the food material, but along with the small and, to some extent, even the medium-sized mammals were greatly overshadowed by *Ovis*.

Evidence of Climatic Change

The accumulation as a whole indicates that during the entire time period represented the climate of this area was colder than at present. Today, the cave location can be considered high Upper Sonoran with Canadian extending down into the steep narrow canyons to about 5,500–6,000 feet, the approximate elevation of the site. Timberline is now at about 10,000 feet on nearby peaks. However, the presence, sometimes in abundance, in the collection of such typically Canadian and Hudsonian forms as *Ochotona, Marmota, Neotoma cinerea, Erethizon,* and *Martes* combined with the total absence of such common and easily taken Upper Sonoran and Transition mammals as desert wood rat *(Neotoma lepida),* raccoon *(Procyon),* striped and spotted skunks *(Mephitis* and *Spilogale),* and badger *(Taxidea),* all of which occur in northern Nevada, strongly suggest that during its occupancy the site and the entire area around it was Canadian or higher. Two other mammals, *Sylvilagus idahoensis* and *Antilocapra,* common in the Upper Sonoran are represented by only a single specimen each and the species of *Thomomys* present is not the one restricted to this same life zone.

This evidence of cooler temperatures in certain early Recent times corroborates the conclusions of Hall (1946: 282–284), previously referred to under the account of *Marmota,* regarding the probability of wetter (and presumably colder) post-Pleistocene climates in the Nevada area.

The Deer Creek material further shows that not only was the climate of the area cooler in general than at present, but that apparently it had been still colder at the beginning of the time of accumulation. In fact, below the 84-inch level, with one exception, all of the nine identifiable genera (seven of them further identified to species) could easily have been drawn from the fauna of the Hudsonian Life-zone. The exception is one fragment of *Felis rufus,* a species which normally ranges up only to the mid-Canadian.

Above this level *Ochotona* and *Martes* do not reappear, and it was perhaps at this time that they became extinct in northern Nevada. The former genus, especially, is thought to be of great significance as an indicator of long-term temperature conditions. Grinnell (1917: 120–122) has shown, conclusively it seems, that in California and other parts of western North America, given suitable talus slopes, the lower altitudinal limit of *Ochotona* is set only by high temperatures. Presumably, then, a warming of the Jarbidge area caused the zone of temperature suitable for pika to disappear. Although no similar data on the direct effect of temperature on *Martes*' altitudinal range is available, it might well be postulated that this animal became extinct for the same reason. However, Grinnell and Storer (1924: 82–83) report that in the Yosemite region of California the summer habitat of the marten is definitely rockslides rather than conifers, and that in this situation it probably feeds largely on *Neotoma cinerea* and *Ochotona*. If this were the case in the Nevadan animal, the loss of an important summer food item in the form of the pika, rather than the temperature *per se,* may have been the deciding factor in its extinction.

Sylvilagus cf. *nuttalli, Castor, Ursus horribilis, Felis rufus, and Bison* (?), although represented by scant material, rule out the possibility of the middle and upper sections reflecting local Hudsonian conditions. But they are not out of place when considered part of a local Canadian fauna, the presence of which is indicated by the abundant remains of more typical higher zonal forms such as *Marmota, Erethizon*, and *Neotoma cinerea*.

Mammals Unexpectedly Rare or Absent

Among medium and large forms of the Transition or above, *Castor* and *Odocoileus* would be expected to occur more often than they actually do. Both range up at least into the Canadian and have been common in the area for the past hundred years or more. Seemingly they would always have had adequate water here and could certainly have been taken by the Indians if they had occurred within even a few miles of the cave. *Odocoileus* tends to be a chaparral and open woodland form and probably would not have been ecologically displaced by *Ovis* of the open rocky areas. It is difficult to believe that any religious restrictions regarding either killing or disposing of skeletal remains, which resulted in only a few bones entering the deposit, would have been applied to both of these presumably desirable food animals. The inevitable conclusion seems to be that the beaver and deer were essentially absent from the Jarbidge area during the whole period of occupancy of the cave.

Coyote *(Canis latrans)* appears very late and in small numbers in the deposit, yet it is now a relatively abundant animal and ranges through all life zones. The black bear *(Ursus americanus),* although probably never common at any particular time, should occasionally have appeared. Hunting equipment heavy enough for taking *Ovis* would likely have been adequate for capture of this animal also. For reasons fully understood by no one, the red fox *(Vulpes fulva) is absent* from a portion of the west-central United States including the northern half of Nevada, and it was apparently missing during these earlier times also.

The absence of mountain lion *(Felis concolor)* remains may be attributed to the past lack of deer, normally its principal food item. Alden H. Miller (Field notes, May 31, 1956) reports 2 hunters took 19 mountain lions during the winter of 1955–56 around Murphy's Hot Springs, Idaho, about 10 miles northeast of Deer Creek Cave, which attests to the fact that they are common today in the area.

Seasonal Occupancy

The mammal remains give little information on the time of year when the cave was used. The abundant *Marmota* and the less frequent *Citellus* material make it certain that it was occupied at least during the period of March to August. The juvenile *Antilocapra* was taken in May or June. All of the remaining forms could have been taken within a few miles of the site during any month of the year.

SUMMARY

At least 20 species of mammals, nearly all likely used for food, are represented by over a thousand identifiable bone fragments in Deer Creek Cave. All of these animals are still found naturally in western North America. No attempt has been made to identify the 50 or so fragments of bird bones present, but their depths of occurrence are noted.

Mountain sheep *(Ovis canadensis)* was the principal food item throughout all but the very earliest time of occupation. At this time wood rat *(Neotoma cinerea),* porcupine *(Erethizon)*, marmot *(Marmota)*, jack rabbit *(Lepus),* and perhaps also pike *(Ochotona)* formed most of the diet, but during the remaining period pika disappeared and, although the other species were still utilized, mountain sheep became decidedly more important. Birds were not used in the initial period and even though they were taken consistently later, they never formed an appreciable food item.

There was no domestication of the dog or any other animal and evidently no religious practices were in force regarding the eating or disposal of mammalian material. Domestic stock and dog appear as intrusions in the uppermost levels of the accumulation.

A relatively cold climate, equivalent to that of the Hudsonian Life-zone, prevailed during the early occupation of the cave. Pika and marten *(Martes)* became extinct as the area warmed to the approximate Transition conditions of today. Typical Upper Sonoran mammals were virtually absent up to at least the time the site was vacated. Beaver *(Castor)* and deer *(Odocoileus)* reached their present abundance in the area only after this period also.

The cave was occupied at least during the warmer six months of the year.

TABLE 1

DISTRIBUTION OF IDENTIFIABLE BONE FRAGMENTS BY LEVEL

(Depth in inches from surface of deposit)

The material from all pits, cuts, and trenches is included in this figure. Fragments from lots representing more than 6 inches of depth have been entered at the midpoint of the distance spanned.

Identifications	Depth?	0–6		6–12		12–18		18–24		24–30	30–36	36–42		42–48	48–54		54–60	60–66	66–72	72–78	78–84	84–90	90–96	96–102		102–108		108–114	114–120	120–126	126–130	Total fragments per species
Ochotona princeps	....	....		....		....		....		....	....	....		....	....		....	....	....	....	....	1	1	....		....	1	1	....	1	1	6
Lepus sp.	....	....		....		....		....		3	1	2		3	1		1	1	1	1	2	....	2	....		....		1	1	1	....	21
Sylvilagus idahoensis	....	....		....		....		....		....	....	....		1	....		....	....	....	....	....	....	....	....		....		....	....	....	....	1
Sylvilagus cf. *nuttalli*	....	....		....		....	1	....		....	....	....		....	....		2	....	1	....	1	....	....	....		....		....	....	....	....	5
Marmota flaviventris	1	....	4	1		2	1	3		5	5	9		13	....		2	1	2	4	2	....	1	1		....	1	....	1	....	....	59
Citellus sp.	....	....		....		1		1		....	....	....		5*	....		1	....	....	....	....	....	1†	2†		....		....	1†	....	....	12
Thomomys sp.	....	....		....		....		....		....	....	....		....	....		2	....	....	....	....	....	....	....		....		....	....	....	....	2
Castor canadensis	....	....		1		....		....		....	....	....		....	....		....	....	....	....	1	....	....	....		....		....	....	....	....	2
Neotoma cinerea	....	....		....	1‡	....	1	2		....	2	....		1	1		1	....	2	1	3	2	4	1		....	1	2	1	2	....	28
Erethizon dorsatum	....	....		1		4	3	1		3	1	5	1	4	6		4	1	1	2	6	2	....	....	2	....		....	1	1	....	49
Large rodent	....	....		....		....		....		....	....	....		1	....		....	....	....	....	....	....	....	....		....		....	....	....	1	2
Canis	2	....	1	....	1	1	2	....		1	....	....		....	....		....	....	....	....	....	....	....	....		....		....	....	....	....	8
Ursus horribilis	....	....		....		....		....		....	....	....		....	....		1	....	....	....	....	....	....	....		....		....	....	....	....	1
Martes americana	....	....		....		....		....		....	....	....		....	....		....	....	....	....	....	1	....	....		....		....	....	....	....	1
Felis rufus	....	1	1	1		1		....		....	1	....		....	....	1	....	....	....	2	....	....	....	....	1	....		....	....	....	....	9
Odocoileus sp.	....	1		....		....		....		....	....	....		....	....		1	....	....	....	....	....	....	....		....		....	....	....	....	2
Odocoileus sp. or *Cervus canadensis*	....	....		....		....		....		....	....	....		....	1		....	....	....	....	....	....	....	....		....		....	....	....	....	1
Antilocapra americana	1	....		....		....		....		....	....	....		....	....		....	....	....	....	....	....	....	....		....		....	....	....	....	1
Antilocapra americana or *Odocoileus* sp.	....	....		....		....		....		....	....	....	1	....	....		....	....	....	....	....	....	....	....		....		....	....	....	....	1
Bison bison or *Bos taurus*	....	....	1	....		....		....		....	....	1		....	....		....	....	....	....	....	....	....	....		....		....	....	....	....	2
Ovis canadensis	2	1	13	2	3	8	11	5		9	17	15		16	8		7	3	5	9	9	3	4	1	5	....	1	....	....	....	....	157
Artiodactyl	....	2	38	10	4	22	13	19		20	32	25		41	37	5	25	12	23	21	15	10	1	3	15	1	2	....	3	....	1	400
Small to medium mammal	....	....	3	....		....		....		....	1	4		4	4		2	2	1	1	7	....	1	....		....		1	1	....	....	32
Medium to large mammal	....	....	6	....		....	3	1		6	8	6	1	10	4	2	3	....	1	5	5	4	1	....	2	....	1	....	....	1	1	71
Large mammal	....	....	5	5		3	3	6	1	5	3	7	1	13	11		7	5	4	8	6	4	1	1	3	....	1	....	....	....	....	103
Very large mammal	....	....		....		....	1	....		....	....	....		....	....		....	....	....	....	....	....	....	....		....		....	....	....	....	1
Bird	1	....	1	....		1		21§		1	3	2		2	....	1	4	1	3	1	4	4	2	....		....		....	....	....	....	52
Total fragments per level	7	5	73	21	9	43	39	59	1	53	74	76	4	114	73	9	63	26	44	55	61	31	19	9	28	1	8	5	9	6	4	1029

*Probably all from the same individual.

†These four are also probably from one individual.

‡Dead only a few years.

§Twenty of these likely represent the same individual.

DEER CREEK CAVE
UNMODIFIED BONE MATERIAL

By Richard H. Brooks
University of Colorado

As part of an archaeological excavation there are collected varying amounts of non-artifactual material. Among these can be listed such items as: chipping detritus, unworked shell remains, the midden of the site collected as samples, and unworked bone material (mammal, bird, reptile, amphibian, and fish). These items are usually sent to specialists for further analysis, and their reports frequently appear as appendices in the back of the archaeological publication. An archaeological approach was attempted in this report in analyzing non-artifactual bone material, which had already been identified zoologically, along with its ecological interpretations.

Since unmodified bone material is found in archaeological sites, it was assumed that additional information, as an adjunct to zoological identification, could be derived from the bone material which would contribute to the archaeological picture. As an archaeologist, familiar with bone identification, the author is attempting to elicit this additional data from the unmodified bones recovered from Deer Creek Cave site.

There are a number of factors involved in the external appearance of bone, besides those landmarks used in zoological identification: (1) is the bone burnt or charred, and of the total bone in a site, what percentage falls in this category; (2) is there any indication of gnawing on the external surface of the bone, and which bone elements are most frequently involved; (3) is there any means of determining whether the gnawing is that of rodents (giving clues to midden disturbance) or that of carnivores, either the dog or wild carnivores; (4) the frequency of split bone, both by the bone element split and the total percent of occurrence; (5) of the split bones what percentage were also burned. Not all of these factors are applicable to any one site, but a concern with this type of data should amplify the information derivable from archaeologically recovered bone material. At the same time this approach would tend to create a closer cooperation between the zoologist and the archaeologist, which eventually might lead to a more diagnostic approach to the role of fragmentary unmodified bone in sites.

Two hundred eighteen catalogued bags of unmodified animal bone were received, after they had already been zoologically identified. There was a total of 8,123 individual fragments, of which 309 were not bone. These latter consisted of small fragments of stone, shell, pottery, etc. (see Table 2 for an itemized listing), and are not considered in the bone analysis.

The total number of unmodified bone fragments was 7,814, which was 96.20 percent of the total number of items counted. Table 2 lists the categories which were used in segregating the bone. For Deer Creek Cave only 30 categories were necessary. The first four

TABLE 2

CATEGORIES USED IN SEGREGATING BONE

Item	Number	Percent
Total number of items	8,123	....
Total bone fragments	7,814	96.20
Burnt bone	2,176	27.85
Split bone	4,937	63.18
Gnawed bone	47	.60
Skull	153	1.96
Maxilla	13	.17
Mandible	31	.41
Teeth	454	5.81
Axis	1	.01
Vertebra	11	.14
Ribs	270	3.55
Scapula	12	.15
Humerus	7	.09
Radius	15	.19
Ulna	8	.10
Pelvis	21	.27
Femur	10	.13
Tibia	23	.29
Phalanges	30	.38
Tarsals	14	.18
Navicular	2	.03
Metapodials	28	.36
Astragalus	7	.09
Canon bone	25	.32
Long bone epiphyses	28	.36
Skull and rib fragments	132	1.69
Cancellous bone	478	6.12
White bone (appear fresh)	104	1.33
Fish bone	2	.03
Bird bone	20	.26
Unidentifiable	1,000	12.80
Stone	267	86.40
Shell	12	3.90
Pottery	2	.65
Wood	16	5.20
Charred wood	8	2.60
Reed	2	.65
Scat	1	.30
Metal (tin)	1	.30
Total non-bone items	309	....
Total percentage	.....	100.00
Total bone fragments	7,814	96.20
Total non-bone items	309	3.80
Totals	8,123	100.00

categories overlap and are separated from the remaining categories because of the appearance of the external surface of the bone. Burnt bone encompasses all the bone fragments which appear blackened; there were no completely charred bones in this site. Some bone was chalky and whitened apparently through burning. Split bone consisted entirely of long bone elements without their epiphyses (which are tabulated separately). Although it is the general assumption that all bone in a site is present due to human action, these two categories imply even greater human involvement. Gnawed bone, in this site, appears to be the result of rodent activity, and there is no indication of carnivore tooth markings. An effort was made to keep count of those bones which appeared extremely white or fresh. This bone had no evidence of long surface weathering, nor of long deposition within the midden. It is suggested that this bone may be part of recent refuse dragged into holes within the site by rodents. Many of these "white bones" showed signs of gnawing, which further confirms their association with rodents.

Of the remaining categories of bone, six of them are categories which give a false appearance of frequency of occurrence. These are skull, teeth, vertebrae, ribs, skull and rib fragments, and cancellous bone. These bone elements are friable (except teeth) and tend to break into many small fragments. For example there are 153 fragments listed for the number under the skull category, which does not mean 153 skulls, but 153 skull fragments, many of which may have come from the same skull. Teeth frequencies are based both on the number of teeth per individual animal, and the fact that under certain conditions teeth will tend to split down the middle or the enamel will tend to fragment off from the tooth. The category, skull and rib fragments, was set up to include those fragments which could be assigned generally to this classification, but were too small to be specifically identified. Cancellous, or spongy, bone includes many of long bone epiphyses, as well as those of the pelvis or scapula which could not be more precisely identified. Whereever a bone element was sufficiently whole as to be recognizable, it was so identified, and eleven categories were set up on this basis: maxilla, mandible, scapula, humerus, radius, ulna, pelvis, femur, tibia, canon bone, and long bone epiphysis. A few of the bone elements survived as a unit. These are the axis, phalanges, tarsals, navicular, metapodials, and astragalus, and their frequency of occurrence is small. Two fragments of fish bone were found with the animal bone lots, and also 20 fragments of bird bone. Of the total bone, there were 1,000 fragments which could not be assigned to any category because they were so small and fragmentary. The bone in all of these categories varied in size from a tiny sliver, less than a centimeter long, to large pieces of split bone, which were almost 10 centimeters long. Table 2 lists these categories by item, number, and percent of the total bone count.

Of those bones classified in the category burnt bone, very few were gnawed, and most of them were split long bones. The category for split bone is possibly large due to the splitting of bone during archaeological excavation, and later through the handling done during analysis. At least 90 percent of the bone was split as a result of the eating patterns of the original occupants of the site. Very few of the split long bone, burnt or unburnt, had been gnawed. Essentially the phalanges, metapodials, and the astragali were the bones on which gnawing was found (in other sites the calcaneus would be added to this group). The gnawing was generally found on the outer or periosteal surface of the bone, and seldom was found on the interior, nor was the bone ever gnawed through. It is possible that this gnawing pattern might be a function of the size of the bone, as it would be small enough to be taken more easily to the nest of a rodent.

Tables 3 and 4 demonstrate the distribution of the bone, both horizontally and vertically through the site. Table 3 shows each level by number and percent of bone fragments, and Table 4 groups this data by level. Horizontally there is a differential distribution of the bone frequencies between the five pits. This is not related to the depth to which the pit was dug, which varies. Pits A1 and C1 have much smaller frequencies of unmodified bone, and Pit B1 has about 6 percent less bone than Pits B2 and C2. The vertical distribution of the unmodified bone has been analyzed by grouping the levels together. Between 18 and 96 inches the major amount of bone material is clustered, with a peak at level 54–60 inches. In general the distribution follows a normal curve pattern, with a quicker buildup of bone in the shallower levels and a more gradual decline towards the deeper levels. Unfortunately this distribution of unmodified bone cannot, at this time, be related to occupation levels of the site.

As can be observed in this description of unmodified bone analyzed for archaeological interpretation, there is little overlap with the zoological analysis. The zoologist, through his identification of unmodified animal bone, can create an environmental background for the archaeologist, with ecological amplifications, relating to the life habits and food supply available to the aboriginal occupants of the site. Cultural bias in the choice of animal food can even be derived from the zoological data—in that frequently the zoologist can interpolate

TABLE 3

DISTRIBUTION OF BONE BY NUMBER AND PERCENT BY LEVEL

Pit B1

Level	Number	Percent
0–6″	5	.06
6–12″	106	1.35
12–18″	170	2.17
18–24″	82	1.04
24–30″	166	2.12
30–36″	636	8.14
36–42″	29	.37
42–48″	21	.26
48–54″	169	2.16
54–60″	97	1.24
60–66″	8	.12
66–72″	11	.14
72–78″	8	.12
78–84″	97	1.24
84–90″	41	.53
90–96″	115	1.47
96–102″	25	.32
Totals	1,786	22.86

Pit B2

Level	Number	Percent
0–12″	6	.08
12–18″	68	.87
12–36″	3	.04
18–24″	48	.61
24–30″	24	.31
30–36″	63	.81
36–42″	16	.21
42–48″	304	3.89
48–54″	271	3.47
54–60″	146	1.87
60–66″	169	2.16
66–72″	372	4.76
72–78″	423	5.41
78–84″	200	2.55
84–90″	65	.83
90–96A″	13	.17
96–102″	3	.04
102–108″	11	.14
114–120″	5	.06
126–130″	6	.07
130–136″	15	.19
Totals	2,231	28.54

Pit C1

Level	Number	Percent
18–24″	123	1.57
24–30″	8	.12
30–36″	14	.17
36–42″	8	.12
42–48″	5	.03
48–54″	12	.15
54–60″	12	.15
60–66″	75	.96
66–72″	8	.12
72–78″	29	.37
78–84″	93	1.19
84–90″	53	.67
90–96″	11	.14
96–102″	83	1.06
102–114″	18	.23
102–108″	59	.76
114–120″	26	.33
120–126″	22	.28
120–126″	33	.42
Totals	692	8.85

Pit C2

Level	Number	Percent
12–18″	18	.23
18–24″	53	.68
18–36″	51	.65
24–30″	71	.91
30–36″	95	1.22
36–42″	110	1.41
42–48″	517	6.61
48–54″	608	7.78
54–60″	189	2.42
60–66″	31	.40
66–72″	102	1.31
72–78″	147	1.88
78–84″	231	2.95
84–90″	24	.31
90–96″	10	.13
96–102″	11	.14
108–114″	6	.08
Totals	2,274	29.11

Trench A

	Level	Number	Percent
Pit A1	0–24″	12	.15
Pit A2	0–24″	149	1.91
Pit A3	24–30″	16	.21
Pit A3	30–36″	18	.23
Pit A3	36–48″	42	.54
Pit A2 and 3	48–60″	85	1.09
Pit A2 and 3	60–90″	162	2.07
Pit A2 and 3	90–114″	321	4.11
Pit A2 and 3	114–120″	26	.33
Totals		831	10.64

TABLE 4

GROUPS, NUMBER, AND PERCENT BY LEVEL

Depth	Pit A1	Pit B1	Pit B2	Pit C1	Pit C2	Total	Percent
—6″	40	5	3	0	0	48	0.61
—12″	40	106	3	0	9	158	2.02
—18″	41	170	68	0	9	288	3.69
—24″	40	82	49	123	70	364	4.66
—30″	16	166	25	8	88	303	3.88
—36″	18	636	64	14	112	844	10.80
—42″	0	29	16	8	110	163	2.09
—48″	42	21	304	5	517	889	11.38
—54″	0	169	271	12	608	1,060	13.57
—60″	85	97	146	12	189	529	6.77
—66″	32	8	169	75	31	315	4.03
—72″	33	11	372	8	102	526	6.73
—78″	33	8	423	29	147	645	8.19
—84″	32	97	200	93	231	653	8.36
—90″	32	41	65	53	24	215	2.75
—96″	80	115	13	11	10	229	2.93
—102″	81	25	3	83	11	203	1.32
—108″	80	0	11	59	0	150	1.92
—114″	80	0	0	18	6	104	1.33
—120″	26	0	5	26	0	57	0.73
—126″	0	0	0	55	0	55	0.70
—132″	0	0	6	0	0	6	0.08
—138″	0	0	15	0	0	15	0.19
Totals	831	1,786	2,231	692	2,274	7,814	99.93

TABLE 5*

TOTAL NUMBER AND PERCENTAGE OF BONES BY LEVEL

(First Breakdown)

Depth	Number	Percent
—6″	48	.61
—12″	158	2.02
—18″	288	3.69
—24″	364	4.66
—30″	303	3.88
—36″	844	10.80
—42″	163	2.09
—48″	889	11.38
—54″	1,060	13.57
—60″	529	6.77
—66″	315	4.03
—72″	526	6.73
—78″	645	8.19
—84″	653	8.36
—90″	215	2.75
—96″	229	2.93
—102″	203	1.32
—108″	150	1.92
—114″	104	1.33
—120″	57	.73
—126″	55	.70
—132″	6	.08
—132″	15	.19

(Second Breakdown)

Depth	Number	Percent
—12″	206	2.63
—24″	652	8.35
—36″	1,147	14.68
—48″	1,052	13.47
—60″	1,589	20.34
—72″	841	10.76
—84″	1,293	16.55
—96″	444	5.68
—108″	353	3.24
—120″	161	2.06
—132″	61	.78
—132″	15	.19

(Third Breakdown)

Depth	Number
—6″	48
—18″	446
—30″	751
—42″	1,007
—54″	1,949
—66″	844
—72″	526
—84″	1,298
—96″	444
—108″	353
—120″	161
—132″	61
—132″	15

(Fourth Breakdown)

Depth	Number
—18″	486
—36″	1,511
—54″	2,112
—72″	1,370
—90″	1,513
—108″	582
—126″	216
—132″	21

*Not all levels to same depth.

the fauna available to the aborigines on the basis of ecology, life zones, and the remains recovered archaeologically—and note the absence of certain animal types in the unmodified bone from the site. Butchering techniques have also been formulated by analyzing the bone elements of each animal type which are found within the midden of a site. In the Deer Creek Cave site, as can be seen in Table 2, all skeletal elements are present.

As has been noted, all skeletal elements of the animals were brought back into the site and there are large amounts of both split bone, 63.18 percent, and burnt bone, 27.85 percent (most of the burnt bone being split also). The human occupants of the site apparently had utilized all portions of the animals for food purposes, which is further evidenced in the splitting and burning of much of the unmodified bone. It is hoped that the highest frequencies of the occurrence of unmodified bone by level will correlate with the heaviest occupation by humans, as indicated by the amount of refuse found. Confirmation must wait until the archaeologist can establish the site sequences, integrating the reports of all the specialists with the information derived from the archaelogical reconstructions.

In conclusion, this analysis of the Deer Creek Cave unmodified bone was an attempt to find out how much additional information could be derived from this type of supplementary archaeological data. Certainly it is a complimentary adjunct to a zoological identification of animal types from an archaeological site. This type of analysis might not be as fruitful in other regions, but in Nevada, where there are numerous dry caves, every item of information can contribute to the interpretation of artifactual or non-artifactual material.

The full utilization of any analysis cannot be realized unless the archaeologist preparing the site report, who knows the full context of the site and its contents, incorporates this information into his interpretation of the archaeology of the site.

FISH REMAINS FROM DEER CREEK CAVE, ELKO COUNTY, NEVADA

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INTRODUCTION

It has been my privilege to examine a collection of fish remains from an archaeological site at Deer Creek Cave, Elko County, Nevada. This cave is situated near the confluence of Deer Creek and the Jarbidge River, about 4 miles north of the town of Jarbidge and 4 miles south of the Idaho boundary, at an elevation of approximately 5,800 feet above sea level (see U.S. Geological Survey Topographic Map, Jarbidge Quadrangle, 1943). Charcoal from the cave deposit at a depth of 30–32 inches (at which some of the fish remains were found) has yielded a radiocarbon date of 2,585±150 years (Richard Shutler, Jr., personal communication).

ACKNOWLEDGMENTS

I am indebted to Richard Shutler, Jr., of the Nevada State Museum, for the opportunity to report on this material; to Lillian J. Dempster, of the California Academy of Sciences, for assistance with the manuscript; and to Carl L. Hubbs, of the University of California, for advice.

MATERIAL

Species Represented

The collection, consisting of 24 fish remains, all of which are identifiable, represents a single species, *Oncorhynchus tshawytscha* (Walbaum), the chinook salmon. This highly regarded food fish is also called king salmon, quinnat salmon, spring salmon, and tyee salmon; the name chinook salmon has been adopted by the American Fisheries Society Committee on Names of Fishes (1960: 11). An excellent colored plate of this species was published by Hudson (1917).

The remains are from two or more chinook salmon, one of which (at least) was about 28 inches in length and perhaps 8 pounds in weight.

Skeletal Elements

The osteological nomenclature follows that of Starks (1901).

One left *opercle* (proximal fragment) was found in Pit 1, Trench B, at a depth of 30–36 inches (Catalog No. 377).

One left *articular* (proximal fragment), 15 *centra* (complete), 1 left *dentary* (distal fragment), 1 left *opercle* (distal fragment), 1 right *opercle* (much of the thin lower part worn away), and 1 *parasphenoid* (fragment of right side) were found in Pit 2, Trench B, at a depth of 42–48 inches (Catalog No. 360). The right *opercle* is 47 mm. long and 28 mm. wide; its glenoid fossa is 10 mm. in greatest diameter (Plate 1, *a*). The *centra* range from 8 to 10 mm. in greatest diameter; one of the largest, 9.6 mm. in greatest diameter, is shown in Plate 1, *b*.

One left *epiotic* (fragment), one left *frontal* (fragment), and one left *opercle* (nearly all the thin lower part worn away) were found in Pit 2, Trench B, at a depth of 48–54 inches (Catalog No. 361).

It has been stated that, with the exception of the *preopercle*, the bones of the opercular series have little taxonomic significance at the generic level among the salmonids (Norden 1961: 731). This statement does not imply that these bones are not readily identifiable—even to species. The *opercle* of *Oncorhynchus tshawytscha* is distinguishable from that of other American salmonids by the greater extent of the network of oblique pits, each with a sharply delineated arcuate rim, that radiate from the region of the glenoid fossa.

The *centra* agree well with comparable material of *Oncorhynchus tshawytscha* in the pattern of their trabecular structure. (The relatively large interspaces adjacent to the rims of the *centrum* are shown in Plate 1, *b*.)

The other skeletal elements agree with material of *Oncorhynchus tshawytscha,* but they are so fragmentary that their identification to species is necessarily presumptive.

DISCUSSION

The seeming unimportance of fish to the Deer Creek Cave people, indicated by the paucity of fish remains found at this site, is worthy of comment.

Fish were utilized extensively by aborigines elsewhere in the Columbia River drainage basin. Craig and Hacker (1940: 140) stated: "Without doubt salmon, either fresh or dried, was the chief single factor in the diet of the Indians of the Columbia Basin in their native state." The magnitude of this food supply is indicated by the fact that, at least until 1875, the Columbia was regarded as the most productive salmon river of the world (Stone 1878: 801).

After attaining maturity in the sea, chinook salmon formerly entered the Columbia River in countless numbers on their spawning migration (see McDonald 1894: 154–155). Under primitive conditions, a part of this spawning run ascended the Snake River and certain streams, including the Bruneau River, that join the Snake River below Shoshone Falls. Some of these anadromous fish that went up the Bruneau River spawned in its headwaters during October (Gilbert and Everman 1894: 178, 199); others are reported to have ascended the tributary Jarbidge River into the State of Nevada (see La Rivers and Trelease 1952: 113). These fish would have been available to the Deer Creek Cave people.

During the early 19th century the lower part of the Bruneau River was within the territory of the Northern Paiute band known as Koa'aga'itöka, or "salmon eaters" (Stewart 1939: 133, map 1). Possibly their predecessors who were contemporaries of the Deer Creek Cave people also subsisted largely on salmon. If so, it is conceivable that those contemporaries intercepted the salmon runs of the Bruneau River to such an extent that few salmon were able to ascend to the higher tributaries, such as the Jarbidge River.

This hypothesis does not explain the absence from Deer Creek Cave of remains of nonmigratory fishes, which would not have been intercepted by people who lived farther down the river. Under primitive conditions a number of edible nonmigratory fishes of fair size almost certainly occurred in the Jarbidge River (see Miller and Miller 1948: 180–185; Miller and Morton 1952: 208; La Rivers 1962: 105–106): a white fish, possibly *Prosopium williamsoni* (Girard); a resident rainbow trout, perhaps *Salmo gairdnerii irideus* (Gibbons); a cutthroat trout, possibly *Salmo clarkii lewisi* (Girard); the Dolly Varden, *Salvelinus malma* (Walbaum); a sucker, probably *Catostomus columbianus* (Eigenmann and Eigenmann); and the northern squawfish, *Ptychocheilus oregonensis* (Richardson).

Elsewhere in western North America these nonmigratory fishes, or closely related forms, were extensively used by the aborigines (Rostlund 1952: 15–25, 31–33). The Nevada Shoshoni, whose territory embraced the region of Deer Creek Cave, are known to have made some use of fish (Steward 1941: 226, 228, map 1).

The small number of salmon remains found in Deer Creek Cave and the absence of remains of other fishes that were probably common in the Jarbidge River therefore indicate that the Deer Creek Cave people relied principally on some food supply other than fish.

PLATE 1

a

b

MATERIAL CULTURE

CHIPPED STONE ARTIFACTS

Projectile Points

Category 1—Side-notched Points

1a 32 specimens (Pl. 5, Fig. 5)

Form: Large triangular point with a short, broad blade. The side notches are deep and quite high on the blade. The base is broad, thinned, and slightly concave. The edges are straight, convex, or asymmetrical; that is having one straight and one convex edge. Two points have edges bearing fine serrations. The flaking on the points is random. One point in this category differs from the others in being much more carefully flaked.

Material: Predominately obsidian; 4 of the 32 specimens are made of chert.

Size: The lengths of 26 measurable points range from 4.4 cm. to 2.8 cm. The average length is 3.49 cm. Of 27 points with measurable widths, the range is 2.8 cm. to 1.6 cm. and the average width 1.99 cm. Twenty-eight points have measurable thicknesses. The range is .6 cm. to .3 cm. and the average .418 cm.

Distribution in the Midden: 18–24″, 1; 30–36″, 1; 36–42″, 1; 42–48″, 4; 48–54″, 3; 54–60″, 7; 60–66″, 2; 66–72″, 3; 72–78″, 1; 78–84″, 3; 84–90″, 1; 90–96″, 1; 90–114″, 1; 126–130″, 1; no provenience, 1.

Comparisons: This type of point is quite commonly found in the northern Great Basin and adjacent areas. It is thought to be most characteristic of an early time period.

Baumhoff and Byrnes 1959: 39, California.

Cowles 1959: pl. 5, Cougar Mountain Cave, Oregon.

Cressman 1956: chart 1, fig. 45, Type 7a, Kawumkan Springs, Oregon.

Cressman, Williams, and Krieger 1940: 46, Type 4, Roaring Springs Cave, Oregon.

Gruhn 1961a: 65, pl. 14, I, Type 9c, Assemblage iv, Wilson Butte Cave, Idaho.

Hindes 1962: pl. 1, i, j, Huntington Lake, California.

Hunt 1953: 44, fig. 17, g–o, La Sal Mountain Area, Utah.

Jennings 1957: 120–121, Types W25 and W26, Danger Cave, Utah.

Riddell 1960: 18, fig. 5, pl. 2a, Subtype 5b (large), Madeline Dune Side-notched, Karlo Site, California.

Steward 1937: 16, fig. 4j, Promontory Cave 1, Utah.

Swanson, Tuohy, and Bryan 1959: 26, Point Type 81, Idaho.

Tuohy 1963: 48, pl. 23, ii, Type 30b, Idaho and Nevada.

Wendorf and Thomas 1951: 110, fig. 49, Concha Complex, Arizona.

1b 4 specimens (Pl. 5, Fig. 5)

Form: Small triangular point with a short, broad blade. The notches are deep and high on the blade. The base is broad, thinned, and concave. The edges are convex, straight, or asymmetrical. The flaking is random. These differ from Category 1a only in that they are smaller and lighter.

Material: Predominately obsidian; one of the four specimens is made of white chert.

Size: The lengths of the four points range from 2.6 cm. to 2.0 cm.; the average is 2.35 cm. The widths range from 1.9 cm. to 1.1 cm.; the average is 1.45 cm. The range of the thickness of the points is from .4 cm. to .2 cm., the average being .312 cm.

Distribution in the Midden: 6–12″, 1; 18–24″, 2; 26–42″, 1.

Comparisons: This is the Desert Side-notched point, general subtype (Baumhoff and Byrnes 1959: 37) which is very common in the West. It is thought to be associated with Shoshoni speakers and to date not earlier than A.D. 1000.

Bliss 1950: fig. 58, Birdshead Cave, Wyoming.

Gruhn 1961b: fig. 2, Type 7, Pence-Duerig Cave, Idaho.

Hunt 1953: 44, fig: 17, La Sal Mountain Area, Utah.

Hunt 1960: 239, fig. 62, Death Valley IV, California.

Kidder 1932: fig. 4, Pecos, New Mexico.

Mulloy 1958: fig. 6, fig. 25, Type 7, Pictograph Cave, Wyoming.

Riddell 1960: 18, fig. 5, pl. 2, Type 5b (small), Karlo Site, California.

Riddell 1951: fig. 1, Iny-2 Type 7, Owens Valley, California.

Rogers 1939: 65, pl. 18, Mohave Desert, California.

Rudy 1953: 114–115, fig. 32, Type 1A11b, western Utah.

Shutler 1961: pl. 10, Shivwits Plateau, Arizona.

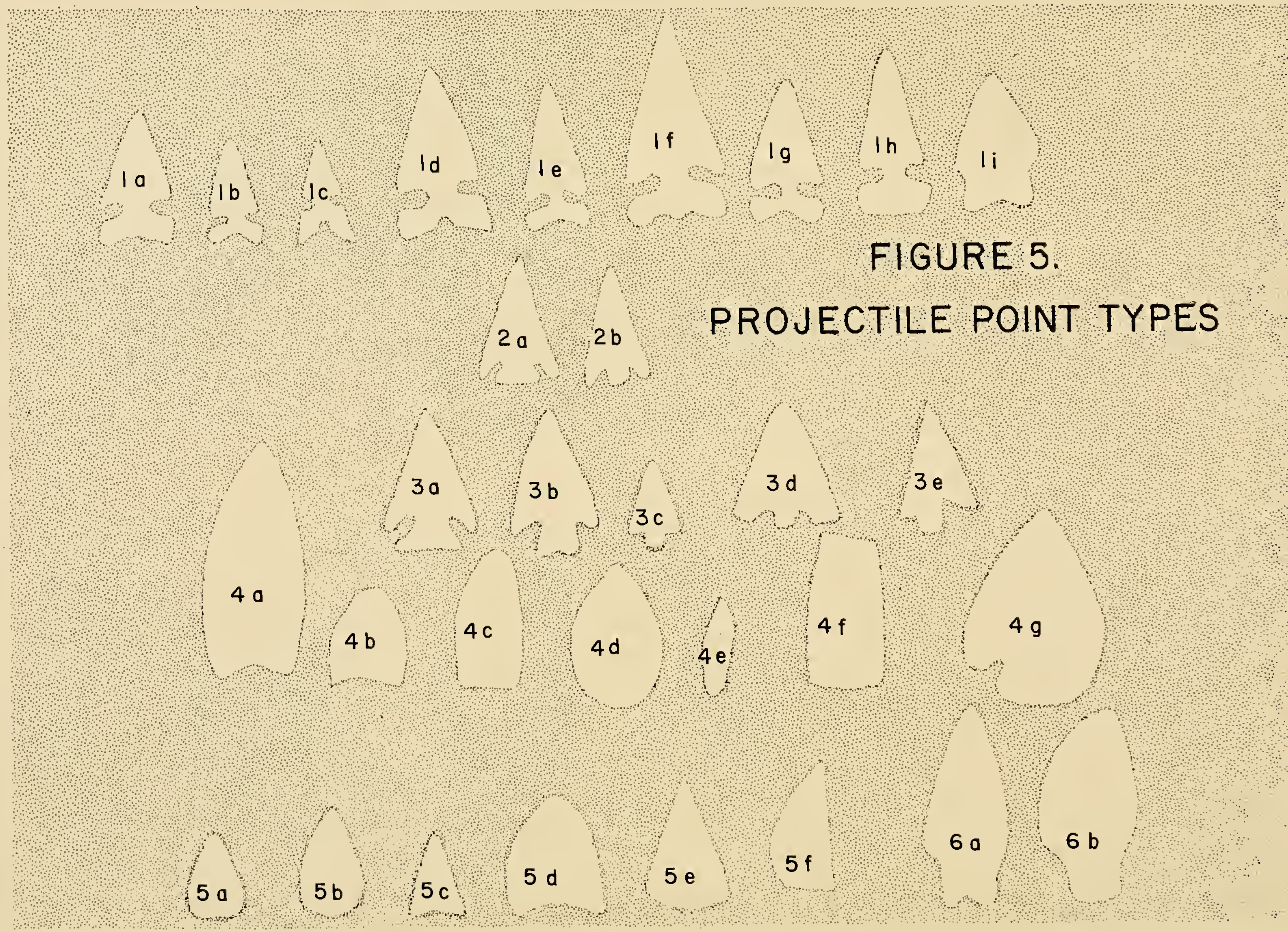

FIGURE 5.
PROJECTILE POINT TYPES

Steward 1937: fig. 4, Promontory Caves, Utah.

Strong 1935: pl. 24, fig. 1, Signal Butte, Nebraska.

Swanson, Tuohy, and Bryan 1959: 25, Point Type 77, Idaho.

Tuohy 1963: 41, pl. 23, Type 18, Idaho and Nevada.

Watson 1950: pl. 3, Stamper Site, Oklahoma.

Wormington 1955: fig. 32, Type R, Fremont Culture.

1c 11 specimens (Pl. 5, Fig. 5)

Form: Small triangular point with side and basal notches. The side notches are small and high on the blade. The base is wide, thinned, and concave, and bears a small notch at its center. The edges are straight. Five of the points have serrated edges. The flaking is well controlled.

Material: Predominately obsidian; 1 of the 11 points is made of red chert and another of grey ignimbrite.

Size: The range in length of the 11 points is from 2.9 cm. to 1.6 cm.; the average is 2.45 cm. Ten points have measurable widths. These range from 1.7 cm. to 1.1 cm., the average being 1.44 cm. The 11 points range in thickness from .4 cm. to .2 cm.; the average is .313 cm.

Distribution in the Midden: 0–12″, 2; 0–18″, 3; 6–12″, 1; 12–18″, 2; 18–24″, 3; 54–60″, 1.

Comparisons: This is the Desert Side-notched point, Sierra Subtype described by Baumoff and Byrnes (1959: 38). It is found commonly in the High Sierras, in the Great Basin, and the Southwest at a late time period. It is thought to be associated with Shoshonean speakers and not earlier than A.D. 1000 in time.

Baumhoff and Byrnes 1959: 48, pl. 1, map 3; Desert Side-notched, Sierra Subtype, eastern California.

Bliss 1950: fig. 58, Birdshead Cave, Wyoming.

Gruhn 1961a: 67, pl. 14, Type 10b, Assemblage 4, Wilson Butte Cave, Idaho.

Gunnerson 1957: 25–26, fig. 14, Fremont area, Utah, Fremont and non-Fremont sites.

Heizer and Baumhoff 1961: 123–128, fig. 3, Desert Side-notched, Sierra Subtype, Wagon Jack Shelter, Nevada.

Hindes 1962: pl. 1, Huntington Lake, California.

Hunt 1953: fig. 18, La Sal Mountain Area, Utah.

Hunt 1960: 239, fig. 62, Death Valley IV, California.

Lister and Dick 1952: pl. 1b, Luster Cave, Colorado.

Meighan 1955: pl. 3, Type 11, Mono County, California.

Mulloy 1958: figs. 23, 25, Point Type 8, Pictograph Cave, Wyoming.

Riddell 1951: figs. 1, 8, Type 8, Owens Valley, California.

Riddell 1960: 17, fig. 5, pl. 2, Type 5c, Karlo Site, California.

Rogers 1939: pl. 18, Mohave Desert, California.

Shutler 1961: 36, pl. 65, Type L, Lost City, Nevada.

Swanson, Tuohy, and Bryan 1959: 27, Point Type 83, Idaho.

Tuohy 1963: 47, pl. 23, Type 29, Idaho and Nevada.

1d 5 specimens (Pl. 5, Fig. 5)

Form: Large triangular points with side and basal notches. The notches are rather high on the blade. The base is wide, thinned, and concave, and bears a small notch at its center. The edges are straight. The flaking is random. These points differ from Category 1c, Desert Side-notched, Sierra Subtype, principally in being larger and heavier.

Material: Predominately obsidian. One specimen is made of grey ignimbrite.

Size: The lengths of the five points range from 4.6 cm. to 3.2 cm., the average being 3.98 cm. The widths vary from 2.8 cm. to 2.4 c.m.; the average width is 2.52 cm. The thicknesses vary from .5 cm. to .65 cm.; the average is .55 cm.

Distribution in the Midden: 18–24″, 1; 42–48″, 2; 60–66″, 1; 66–72″, 1.

Comparisons:

Cressman, Williams, and Krieger 1940: 46, fig. 10, Type 5, Roaring Springs Cave, Oregon.

Steward 1937: 16, fig. 4, Promontory Caves, Utah.

1e 5 specimens (Pl. 5, Fig. 5)

Form: Large triangular points with side notches. The side notches are large and "comma-shaped." The edges are convex. The bases are broad, thinned, and concave. The flaking is random.

Material: All five points are made of obsidian.

Size: The five lengths vary between 5.5 cm. and 2.6 cm.; the average is 4.34 cm. The widths range from 2.7 cm. to 1.9 cm., the average being 2.26 cm. The range of the thickness of the points is from .5 cm. to .35 cm.; the average thickness is .45 cm.

Distribution in the Midden: 26–42″, 1; 42–48″, 1; 48–54″, 1; 60–66″, 1; 78–84″, 1.

Comparisons: This category corresponds to Baumhoff and Byrnes Desert Side-notched point, Redding Subtype (1959: 38), another of the late Desert Side-notched types.

Baumhoff and Byrnes 1959: 48, pl. 1, map 3, Desert Side-notched, Redding Subtype, eastern California.

Tuohy 1963: 48, pl. 23, Type 30a, Idaho and Nevada.

1f 1 specimen (Pl. 5, Fig. 5)

Form: Very large triangular point with large and deep "comma-shaped" side notches. The edges are slightly convex. The base is broad, thinned, and deeply concave. At the center of the basal concavity there is a small projecting triangular nipple. The flaking is fairly well controlled and oblique.

Material: Obsidian.

Size: The length is 6 cm., the width 2.8 cm., and the thickness .6 cm.

Distribution in the Midden: The specimen comes from the 60–90-inch level.

Comparisons: Except for the nipple in the center of the base this point answers the description of the Desert Side-notched, Redding Subtype.

Baumhoff and Byrnes 1959: 48, pl. 1, map 3, Desert Side-notched, Redding Subtype, eastern California.

1g 7 specimens (Pl. 5, Fig. 5)

Form: Large elongated triangular points with deep side notches low on the blade. The base is wide, thinned, straight, and bears a small or large notch at its center. The edges are straight or slightly convex. Three specimens have finely serrated edges. The flaking is carefully done on four specimens and crudely done and random on the other three.

Material: Predominately obsidian; one point is made of yellow chert and another of red ignimbrite.

Size: The seven lengths range from 5.7 cm. to 3.5 cm., the average being 4.15 cm. The seven widths vary between 2.9 cm. and 1.6 cm.; the average is 2.2 cm. The thicknesses range from .6 cm. to .35 cm.; the average thickness is .5 cm.

Distribution in the Midden: 42–48″, 1; 48–54″, 1; 54–60″, 1; 60–90″, 1; 66–72″, 1; 72–78″, 2.

Comparisons:

Cressman 1948: pl. 17, Oregon.

Cressman, Williams, and Krieger 1940: 46, Roaring Springs Cave, Oregon.

Jennings 1957: 122, 124, Types W28 and W30, Danger Cave, Utah.

Mulloy and Lewis 1943: 299, fig. 28, Wyoming.

Steward 1937: 16, fig. 4, Promontory Caves, Utah.

1h 7 specimens (Pl. 5, Fig. 5)

Form: Large triangular points with a short broad blade. The side notches are deep and quite high on the blade. The base is broad, thinned, and straight. The edges are straight, convex, or asymmetrical. The flaking is random.

Material: All seven specimens are made of obsidian.

Size: Four points have measurable lengths; these range from 4.4 cm. to 3.8 cm., the average being 4 cm. The four measurable widths range from 2.4 cm. to 1.8 cm.; the average width is 2.1 cm. The thicknesses of the seven points range from .6 cm. to .3 cm.; the average is .442 cm.

Distribution in the Midden: 48–54″, 4; 60–90″, 1; 72–78″, 1; 78–84″, 1.

Comparisons: Closely similar to Category 1a except that this point has a straight rather than a concave base.

Cressman 1956: fig. 45, Type 7a, Oregon.

Cressman, Williams, and Krieger 1940: 46, Roaring Springs Cave, Oregon.

Gruhn 1961a: 66, pl. 14, Type 9d, Assemblage IV and V, Wilson Butte Cave, Idaho.

Gruhn 1961b: 3, fig. 2, Type 11, Pence-Duerig Cave, Idaho.

Jennings 1957: 121, Type W26, Danger Cave, Utah.

Steward 1937: fig. 4, Promontory Caves, Utah.

Tuohy and Swanson 1960: figs. 1, 84, Site 10–AA–15, Idaho.

1i 4 specimens (Pl. 5, Fig. 5)

Form: Short thick points of triangular shape. The side notches are shallow and set low on the blade. The base is wide and thinned. There is a shallow basal notch. The tangs of the base are rounded. The edges are straight or convex. The flaking is crude and random.

Material: All four specimens are made of obsidian.

Size: Only one point has a measurable length; this is 3.5 cm. The four widths vary from 2.2 cm. to 1.9 cm.; the average is 2.02 cm. The thicknesses range from .6 cm. to .4 cm., the average thickness being .5 cm.

Distribution in the Midden: 0–24″, 1; 54–60″, 1; 60–90″, 1; 90–114″, 1.

Comparisons: Quite similar to points found by Meighan in Mendocino County, California, protohistoric and historic in time. At Deer Creek Cave these points are also found at early levels.

Meighan 1955: 15, pl. 4, Type 14, Late Complex, Mendocino County, California.

Category 2—End-notched Points

2a 24 specimens (Pl. 5, Fig. 5)

Form: Long triangular points with fairly deep end notches. The edges are straight or asymmetrical. The tips of two have a slight lateral twist. The bases are thinned and expanding; the tangs are long and squared. The flaking varies between being random and fairly well directed.

Material: Twelve specimens are made of obsidian, 11 of chert, and one of grey ignimbrite.

Size: Twenty-two points have measurable lengths. These range from 4.2 to 2.5 cm., the average being 3.1 cm. Twenty-two widths vary from 2.2 to .7 cm., the average being 2 cm. The thickness of these points ranges from 1.25 to .25 cm.; the average is .31 cm.

Distribution in the Midden: 6–12″, 3; 12–18″, 7; 18–24″, 1; 0–12″, 1; 0–18″, 1; 0–24″, 1; 24–30″, 2; 30–36″, 2; 36–42″, 2; 66–72″, 1.

Comparisons: This kind of point is widely distributed in the West. It is found in Anasazi Basketmaker and Developmental Pueblo sites, in Puebloid and Fremont sites, in Armagosa II and Death Valley III sites, in Lovelock sites, and Danger Cave, Utah, and the upper levels of Wagon Jack Shelter, Nevada, where it is called the Eastgate Expanding stem point (Heizer and Baumhoff 1961: 123).

Brew 1946: fig. 172, Alkali Ridge, Utah.

Fenenga and Riddell 1949: 211, fig. 58, Tommy Tucker Cave, California.

Gillen 1941: pls. 4, 7, Marysvale, Utah.

Harrington 1933: fig. 56, Gypsum Cave, Nevada.

Heizer and Baumhoff 1961: figs. 2, h–v, Wagon Jack Shelter, Nevada.

Heizer and Krieger 1956: pl. 14, Humboldt Cave, Nevada.

Hunt 1953: 32, fig. 11, La Sal Mountain Area, Utah.

Hunt 1960: 136–137, figs. 40, 41, Death Valley, California.

Jennings 1957: 129, Type W37, Danger Cave, Utah.

Lister 1951: figs. 4, 7, Castle Park, Colorado.

Lister and Dick 1952: pls. 1, 2, Luster Cave, Colorado.

Martin 1939: fig. 117, Ackmen-Lowry area Colorado.

Meighan 1955: pl. 3, Type 7, Mono County, California.

Morris 1939: pl. 126, La Plata District, Colorado.

Riddell 1960: 17, fig. 5, pl. 2, Types 3a, b, Karlo Site, California.

Roberts 1929: pl. 28, Shabikeshchee Village, New Mexico.

Roberts 1930: pls. 51, 52, Piedra District, Colorado.

Roberts 1940: pls. 45, 46, Whitewater District, Arizona.

Rogers 1939: pl. 18, Mohave Desert, California.

Sayles 1935: pl. 24, North-central Plains, Texas.

Schroeder 1952a: fig. 33, Willow Beach.

Shutler 1961: 36, pls. 65, 66, Lost City, Nevada.

Tuohy 1963: 45, pl. 23, Types 23b, c, Idaho and Nevada.

2b 13 specimens (Pl. 5, Fig. 5)

Form: Long triangular points with fairly deep end notches. The edges are straight or concave. Two points have fine serrations on their edges. The bases are thinned and straight-sided. The tangs are long and squared. The flaking varies between being random and fairly well directed.

Material: Predominately obsidian. Three points are made of red chert, one of basalt, and one of grey ignimbrite.

Size: The range of the lengths of the 13 points is from 4.8 to 2.5 cm.; the average is 3.6 cm. The widths vary from 2.7 to 1.7 cm., the average being 2.2 cm. The thickness ranges from .4 to .25 cm.; the average thickness is .32 cm.

Distribution in the Midden: 0–12″, 1; 6–12″, 1; 12–18″, 4; 18–24″, 3; 24–30″, 2; 60–66″, 1; no provenience, 1.

Comparisons: This type of point is found mainly in Basketmaker and Developmental Pueblo sites. It is also found in Puebloid sites, the upper levels of Danger Cave, and Lovelock sites, Armagosa II and Death Valley III.

Brew 1946: 172, Alkali Ridge, Utah.

Grosscup 1960: fig. 5, Type 3, Lovelock Cave, Nevada.

Heizer and Kreiger 1956: pl. 14, Humboldt Cave, Nevada.

Hunt 1960: 136–137, figs. 40, 41, Death Valley, California.

Jennings 1957: 129, Type W38, Danger Cave, Utah.

Morris 1939: figs. 125, 126, La Plata District, Colorado.

Rogers 1939: pl. 18, Mohave Desert, California.

Rudy 1953: 109, fig. 27, Type IA3, Western Utah.

Schroeder 1952a: fig. 33, Willow Beach, Arizona.

Shutler 1961: 36, pls. 65, 66, Lost City, Nevada.

Smith 1952: fig.4, Deadman Cave, Utah.

Steward 1937: fig. 41, Promontory Cave No. 2, Utah.

Category 3—Corner-notched Points

3a 52 specimens (Pl. 5, Fig. 5)

Form: Small to large elongated triangular point. The corner notches are deep and the tangs are long and oblique. The edges are convex, straight, or asymmetrical. Six points have finely serrated edges. The stems are thinned, expanding, and their bases are straight or slightly concave or convex. The flaking is fairly well directed and regular.

Material: Predominately obsidian. Three points are made of red chert and one of white and another of yellowish chert. Three are made of brown rhyolite, one of grey rhyolite, and two of grey ignimbrite.

Size: Forty-nine points have measurable lengths. These range from 4.6 to 1.8 cm.; the average is 3.41 cm. The widths of 50 points can be measured. They vary from 2.9 to 1.3 cm., the average being 2.14 cm. The thickness of the 52 points ranges from .7 to .2 cm.; the average thickness is .45 cm.

Distribution in the Midden: 0–10″, 1; 0–12″, 1; 6–12″, 2; 0–18″, 2; 12–18″, 6; 18–24″, 12; 0–24″, 2; 24–30″, 8; 30–36″, 2; 18–36″, 1; 36–42″, 2; 42–48″, 2; 48–54″, 2; 54–60″, 1; 48–60″, 1; 60–66″, 1; 66–72″, 1; 78–84″, 1; 60–90″, 1; 102–108″, 1; 90–114″, 2.

Comparisons: Similar points are known from Anasazi sites in the Southwest as early as Basketmaker III, from Amargosa II and Death Valley II and III sites in southern California deserts, and are known from the Fremont, Puebloid, and Lovelock cultures.

Bliss 1950: fig. 58, Birdshead Cave, Wyoming.

Baumhoff n.d., Type V, lower level, Ruby Cave, Nevada.

Gruhn 1961a: 69, pl. 14, Type 11d, Assemblage V, Wilson Butte Cave, Idaho.

Gruhn 1961b: fig. 2, Point Type 9, Pence-Duerig Cave, Idaho.

Heizer and Baumhoff 1961: 123–124, fig. 2, Rose Spring Corner Notched, upper layers, Wagon Jack Shelter, Nevada.

Hunt 1953: 34–39, figs. 12–14, Fremont, La Sal Mountain area, Utah.

Hunt 1960: 102, 139, figs. 30, 41, Death Valley II and III, California.

Jennings 1957: 129, Type W37, Danger Cave, Utah.

Kidder and Guernsey 1919: fig. 48, northeastern Arizona.

Kidder and Guernsey 1921: pl. 35, northeastern Arizona.

Lister 1951: fig. 7, Castle Park, Utah.

Loud and Harrington 1929: 106, pl. 56, Lovelock Cave, Nevada.

Morris and Burgh 1954: 56, figs. 29, 81, Durango, Colorado.

Mulloy 1958: fig. 6, Point Type 6, Pictograph Cave, Wyoming.

Rogers 1939: pl. 18, Armagosa II, Mohave Desert, California.

Rudy 1953: 110, fig. 30, Type 1A4, western Utah.

Schroeder 1955: 131, pl. 15, table 19, Zion Canyon, Utah.

Shutler 1961: 36, pl. 65, Group B, Lost City, Nevada.

Smith 1952: fig. 4, Type 1, Deadman Cave, Utah.

Swanson, Tuohy, and Bryan 1959: 21, Point Type 62, Idaho.

Tuohy 1963: 4, pl. 23, Type 21c, Idaho and Nevada.

3b 30 specimens (Pl. 5, Fig. 5)

Form: Small to large elongated triangular points. The corner notches are wide and the tangs tend to be short and blunt. The edges are convex, straight, or asymmetrical. Eight specimens have serrated edges. The bases are slightly expanding or straight, thinned, and bear a basal notch. The flaking tends to be well directed and regular.

Material: Predominately obsidian. Three points are made of fine-grained black basalt. Two are red chert and two red ignimbrite.

Size: Twenty-four specimens have measurable lengths. These range from 5.3 to 2.5 cm.; the average is 4.08 cm. Twenty-six points have measurable widths ranging from 3.35 cm. to 1.6 cm., the average being 2.3 cm. The thicknesses of 27 points could be measured. These varied between .8 and .3 cm., the average being .544 cm.

Distribution in the Midden: 0–12″, 1; 12–18″, 1; 18–24″, 2; 0–24″, 1: 24–30″, 3; 30–36″, 2; 36–42″, 1; 42–48″, 2; 48–54″, 3; 54–60″, 1; 60–66″, 3; 66–72″, 1; 78–84″, 1; 60–90″, 2; 90–96″, 1; 96–102″, 1; 90–114″, 2; no provenience, 2.

Comparisons: Similar points are known from preceramic levels in western Utah and eastern Nevada, and the Southwest and southern California. These points are also found in Lovelock Culture sites.

Baumhoff n.d., Type 3, Ruby Cave, Nevada.

Grosscup 1960: 17, fig. 6, Nevada Type II, late or transitional, Lovelock Cave, Nevada.

Gunnerson 1957: 25, fig. 14, Fremont area.

Heizer and Baumhoff 1961: 128, Elko Eared, fig. 4, Wagon Jack Shelter, Nevada.

Heizer and Krieger 1956: SCb2, Humboldt Cave, Nevada.

Hunt 1960: 86, 139, figs. 24, 41, Death Valley II and III, California.

Hurt and McKnight 1949: fig. 43, San Augustine Plains, New Mexico.

Jennings 1957: 122–125, W28–W31, Danger Cave, Utah.

Lister 1953: 265, The Stemmed Indented Base Point, a Possible Horizon Marker. *American Antiquity*, Vol. 18, No. 3, p. 265, SLC.

Loud and Harrington 1929: pl. 56, Lovelock Cave, Nevada.

Riddell 1960: 17, fig. 5, pl. 2, Type 3d, Karlo Site, California.

Rudy 1953: 108–109, fig. 28, IA3, western Utah.

Wendorf and Thomas 1951: 109, fig. 49, Concha Complex, Arizona.

3c 8 specimens (Pl. 5, Fig. 5)

Form: Small elongated triangular point. The corner notches are deep and the tangs are long and oblique or sharp. The edges are convex or straight. The stems are thinned and parallel-sided; their bases straight or somewhat rounded. The flaking is fairly regular.

Material: Predominately obsidian; one point is made of yellowish chert.

Size: The lengths of five points could be measured. These range from 3.7 to 2.1 cm., the average being 2.9 cm. The widths of the eight points range from 1.9 to 1.1 cm.; the average is 1.4 cm. The thickness of the points varies between .4 and .2 cm.; the average thickness is .343 cm.

Distribution in the Midden: 12–18″, 2; 18–24″, 2; 0–24″, 2; 18–36″, 1; 42–48″, 1.

Comparisons: Points of this type are known from Basketmaker III and Pueblo I sites, Fremont and Puebloid sites.

Brew 1946: fig. 172, Alkali Ridge, Utah.

Gillen 1941: pls. IV, VII, Marysvale, Utah.

Harrington 1933: 125, fig. 56, Gypsum Cave, Nevada.

Hunt 1953: 30–33, figs. 10, 11, Fremont, La Sal Mountain Area, Utah.

Lister 1951a: figs. 4, 7, Castle Park, Colorado.

Lister 1951b: fig. 4, Hells Midden, Colorado.

Lister and Dick 1952: pls. 1, 2, Luster Cave, Colorado.

Martin 1939: fig. 117, Ackmen-Lowry area, Colorado.

Morris 1939: pl. 126, La Plata District, Colorado.

Morss 1931: pl. 32, Fremont River.

Roberts 1929: pl. 28, Shabikeshchee Village, New Mexico.

Roberts 1930: pls. 51, 52, Piedra District, Colorado.

Roberts 1940: pls. 45, 46, Whitewater District, Arizona.

Rudy 1953: 108–109, fig. 27, IA3, western Utah.

Shutler 1961: 35, pl. 64, Group C, Lost City, Nevada.

Smith 1952: fig. 4, Deadman Cave, Utah.

Steward 1936: fig. 12, Beaver, Utah.

Steward 1937: fig. 41, Promontory Caves, Utah.

3d 4 specimens

Form: Large triangular corner- or end-notched points. The stems are straight and have straight bases. The edges are asymmetrical. They are unique in being very crudely flaked on only one face.

Material: Two of the four are made of obsidian and two of reddish chert.

Size: Only two points have measurable lengths; these are 4.0 cm. and 3.5 cm. The four widths range from 3.3 to 2.1 cm.; the average is 2.47 cm. The thickness ranges from .5 to .35 cm.; the average is .41 cm.

Distribution in the Midden: 0–24″, 2; 18–24″, 1; 54–60″, 1.

3e 1 specimen (Pl. 5, Fig 5)

Form: An elongated asymmetrical triangular corner-notched point. One notch is deeper, larger, and higher than the other, making the tang on that side also larger and higher. The stem is parallel-sided and has a straight base. It is set off-center nearer to the smaller notch. The edges are straight. The edge on the side of the smaller notch rises almost vertically to the tip. The other edge is serrated and rises in a more normal slanting manner to the tip. The flaking is random.

Material: Obsidian.

Size: Length, 4.6 cm.; width, 2.7 cm.; thickness, .7 cm.

Distribution in the Midden: 12–18″, 1.

Category 4—Stemless Lanceolate Points

4a 22 specimens (Pl. 5, Fig. 5)

Form: Slender, although fairly thick lanceolate points. The greatest width is towards the base. The edges are convex. Four specimens show serrated edges. The bases are thinned and concave. The flaking is well directed, and on five points is directed obliquely across both faces of the blade.

Material: Predominately obsidian; two points are made of white chert.

Size: The lengths of only three points could be measured; these are 5.4 cm., 3.8 cm., and 3.3 cm. The widths of 21 range from 1.8 to 1.3 cm., the average being 1.56 cm. The thicknesses vary between .7 and .4 cm.; the average is .55 cm.

Distribution in the Midden: 12–18″, 1; 18–24″, 1; 18–36″, 1; 30–36″, 2; 36–42″, 2; 42–48″, 5; 48–54″, 1; 54–60″, 2; 60–66″, 1; 66–72″, 1; 72–78″, 1; 84–90″, 2; 108–114″, 1; no provenience, 1.

Comparisons: This type of point Jennings (1957: 106) called the most characteristic artifact of Danger Cave. Rudy thinks it is pre-ceramic in western Utah (1953: 117).

Cressman 1947: pl. 16, Oregon.

Fitzwater and Van Vlissengen 1960: pl. II, El Portal, California.

Grosscup 1960: 16–17, figs. 5, 6, Types 5, 1, Lovelock Cave, Nevada.

Harrington 1948: 81, fig. 29, Borax Lake, California.

Harrington 1957: 51, Shoulderless Pinto, Little Lake, California.

Heizer and Baumhoff 1961: 128, fig. 5, Humboldt Concave Base, Wagon Jack Shelter, Nevada.

Hindes 1962: pl. 1, Huntington Lake, California.

Hunt 1953: 26, La Sal Mountain Area, Utah.

Hunt 1960: 83–86, figs. 22, 23, Death Valley II, California.

Jennings 1957: 106, W6, Danger Cave, Utah.

Loud and Harrington 1929: pl. 56, Lovelock Cave, Nevada.

Riddell 1960: 20–22, fig. 7, pl. 2, Subtypes 9c, d, Karlo Site, California.

Rogers 1939: pl. 19, Paiute-Shoshoni, southern California deserts.

Rudy 1953: 117, fig. 36, Type IIA3, Western Utah.

Shutler, Shutler, and Griffiths 1960: 8, pl. 7, Stuart Rockshelter, Nevada.

Smith 1952: fig. 5, Deadman Cave, Utah.

Swanson, Tuohy, and Bryan 1959: 10, Point Type 17, Idaho.

Tuohy 1963: 36, pl. 22, 4c, e, Idaho and Nevada.

Wheeler 1952: pl. 10, lowest level, Etna Cave, Nevada.

4b 6 specimens (Pl. 5, Fig. 5)

Form: These short thick points are similar to *4a*, but they are much shorter for their width and randomly flaked.

Material: Three specimens are made of obsidian, one of grey ignimbrite and two of white chert.

Size: The five measurable lengths range from 2.5 to 1.6 cm.; the average is 2.22 cm. The widths range from 2.2 to 1.3 cm., the average being 1.6 cm. The thicknesses vary between .6 and .4 cm.; the average thickness is .535 cm.

Distribution in the Midden: 30–36″, 1; 42–48″, 2; 48–54″, 1; 54–60″, 1; 102–114″, 1.

Comparisons: See *4a* above.

4c 4 specimens (Pl. 5, Fig. 5)

Form: Slender lanceolate points. The edges are convex. The greatest width is near the base in two points and near the middle of the blade on two. One specimen has finely serrated edges. The bases are thinned and straight.

Material: Three points are made of obsidian and one of white chert.

Size: The lengths range from 3.9 to 3.6 cm.; the average is 3.75 cm. The widths range from 1.9 to 1.5 cm., the average being 1.67 cm. The thickness of the points ranges from 1.6 to .5 cm.; the average thickness is .86 cm.

Distribution in the Midden: 24–30″, 1; 42–48″, 2; 90–114″, 1.

Comparisons: Known from pre-ceramic sites in the Southwest and Lovelock sites.

Grosscup 1960: fig. 6, Type 12, Lovelock Cave, Nevada.

Jennings 1957: fig. 11, Shaw Cave, Wyoming, Juke Box Cave, Utah.

Loud and Harrington 1929: pl. 56, Lovelock Cave, Nevada.

Riddell 1960: 20–22, fig. 7, pl. 2, Type 9B, Karlo Site, California.

Wendorf and Thomas 1951: fig. 49, Concha Complex, Arizona.

4d 1 specimen (Pl. 5, Fig. 5)

Form: Rounded lanceolate point fragment. The point is quite thick and wide for its length. The edges are convex and the base rounded. The tip is broken off.

Material: Obsidian.

Size: Length (estimated), 4.5 cm.; width, 2.2 cm.; thickness, .8 cm.

Distribution in the Midden: The specimen comes from the 90–96-inch level.

Comparisons:

Campbell and Campbell 1935: 42, pl. 12, Pinto Basin, California.

Heizer and Baumhoff 1961: fig. 5, unnamed leaf-shaped points, Wagon Jack Shelter, Nevada.

Riddell 1960: 20–22, fig. 7, pl. 2, Type 9A, Karlo Site, California.

Shutler 1961: 36, pl. 64, Group N, Lost City, Nevada.

4e 6 specimens (Pl. 5, Fig. 5)

Form: Very small leaf-shaped points of irregular outline. The edges are straight or slightly convex. Two specimens have a slight contracting at the base which suggests a stem. Four of these points are flaked on only one face. The flaking is random. It is more than likely that all of these are unfinished.

Material: Predominately obsidian; one is made of red chert.

Size: The lengths range from 3.2 to 1.8 cm., the average being 2.38 cm. The widths vary between 1.1 and .8 cm.; the average is .958 cm. The thickness of the points ranges from .4 to .2 cm.; the average is .283 cm.

Distribution in the Midden: 12–18″, 2; 18–24″, 1; 12–36″, 1; 54–60″, 1; 90–96″, 1.

4f 10 specimens (Pl. 5, Fig. 5)

Form: Long slender lanceolate points. There are no whole points represented. There is one tip and one basal fragment in the collection; the rest are medial sections. The one base fragment is thinned and straight. The edges seem to be straight or slightly convex and serrated. The flaking slants obliquely across both faces.

Material: Predominately obsidian; one specimen is made of white chert.

Size: No measurements were taken because no whole points were found.

Distribution in the Midden: 24–30″, 3; 30–36″, 1; 42–48″, 1; 60–66″, 1; 78–84″, 2.

Comparisons: This type of point is known from sites in the Great Basin and California.

Beardsley 1948: pl. 1, (Middle Horizon), Humboldt Cave, California.

Jennings 1957: 132, Type W42, Danger Cave, Utah.

4g 1 specimen (Pl. 5, Fig. 5)

Form: A leaf-shaped blade with convex edges and a rounded base. There is one notch flaked into a corner of the base. The flaking is random.

Material: Red chert.

Size: Length, 4.2 cm.; width, 2.9 cm.; thickness, .6 cm.

Distribution in the Midden: 24–30″, 1.

Comparisons:

Heizer and Baumhoff 1961: 131–134, fig. 7, corner-notched blade, Wagon Jack Shelter, Nevada.

Mulloy 1942: 46, fig. 24, Hagen Site, Montana.

Swanson, Tuohy, and Bryan 1959: 30, 78, Idaho.

Category 5—Stemless Triangular Points

5a 4 specimens (Pl. 5, Fig. 5)

Form: Small isosceles triangular, stemless points with straight sides and straight bases. The flaking is fairly well directed.

Material: Predominately chert; one specimen is made of obsidian.

Size: The lengths range from 2.5 cm. to 1.7 cm., the average being 2.18 cm. The widths vary between 1.45 cm. and .85 cm. The average width is 1.22 cm. The thickness ranges from .4 to .2 cm.; the average is .31 cm.

Distribution in the Midden: 0–12″, 2; 36–42″, 1; no provenience, 1.

Comparisons:

Elsasser 1958: fig. 4, Pershing County, Nevada.

Gruhn 1961a: 58, Type 6a, Assemblage VI, Dietrich Phase, Wilson Butte Cave, Idaho.

Gruhn 1961b: fig. 2, Type 4, Pence-Duerig Cave, Idaho.

Gunnerson 1957: 26, figs. 7, 9, Fremont area.

Harrington 1957: fig. 41, Little Lake, California.

Heizer and Baumhoff 1961: 127, fig. 5, Cottonwood Triangular, Wagon Jack Shelter, Nevada.

Hindes 1962: pl. 1, Huntington Lake, California.

Hunt 1953: 26, fig. 8, La Sal Mountain area, Utah.

Hunt 1960: 238, fig. 61, Death Valley IV, California.

Jennings 1957: 130, W40, Danger Cave, Utah.

Lathrap and Shutler 1955: fig. 67, California.

Meighan 1955: pl. 3, Type 1, Mono County, California.

Mulloy 1958: fig. 11, Blade Type 2, Pictograph Cave, Wyoming.

Riddell 1951: fig. 1, Type 5, Owens Valley, California.

Riddell 1960: 15–16, fig. 4, pl. 2, Type 1B, Karlo Site, California.

Rudy 1953: 122, fig. 37, IIB1, western Utah.

Shutler 1961: 37, pl. 67, Group D, Lost City, Nevada.

Shutler, Shutler, and Griffiths 1960: 33, pl. 7, Stuart Rockshelter, Nevada.

Swanson, Tuohy, and Bryan 1959: 6, Point Type 1, Idaho.

Taylor 1954: 45, Type 3, Garrison Site, Utah.

Tuohy 1963: 32, pl. 22, Type 1, Idaho and Nevada.

Wormington 1955: fig. 31, Fremont Type A, Turner-Look Site, Colorado.

5b 2 specimens (Pl. 5, Fig. 5)

Form: Small isosceles triangular points with straight edges and convex thinned bases. The flaking is well directed.

Material: One specimen is made of obsidian; the other of grey ignimbrite.

Size: One point measures 2.5 cm. long, 1.5 cm. wide, and .3 cm. thick. The other is 2 cm. long, 1.2 cm. wide, and .35 cm. thick.

Distribution in the Midden: One point is from the 0–12-inch level and the other from the 18–24-inch level.

Comparisons:

Fenenga and Riddell 1949: 211, fig. 58, Tommy Tucker Cave, California.

Fitzwater and Van Vlissingen 1960: pl. II, El Portal, California.

Gruhn 1961a: 56, Type 4b, Assemblage V, Wilson Butte Cave, Idaho.

Harrington 1957: fig. 41, "Flake point," Little Lake, California.

Heizer and Baumhoff 1961: 127, fig. 5, Wagon Jack Shelter, Nevada.

Hunt 1960: 237, fig. 61, Death Valley III and IV, California.

Meighan 1955: pl. 3, Type 2, Mono County, California.

Riddell 1960: 15–16, fig. 4, pl. 2. Type 1a, Karlo Site, California.

Shutler 1961: 37, pls. 65, 66, Group P, Lost City, Nevada.

Swanson, Tuohy, and Bryan 1959: 6, Point Type 4, Idaho.

Tuohy 1963: 33, pl. 22, Type 2, Idaho and Nevada.

5c 3 specimens (Pl. 5, Fig. 5)

Form: Small isosceles triangular points with convex edges and concave thinned bases. The flaking is well directed.

Material: Two of the points are made of obsidian and one of grey ignimbrite.

Size: The largest point is 2.7 cm. long, 1.3 cm. wide, and .5 cm. thick. The second is 2.6 cm. long, 1.5 cm. wide, and .6 cm. thick. The smallest is 2.4 cm. long, 1.3 cm. wide, and .45 cm. thick.

Distribution in the Midden: 36–42″, 1; 48–54″, 1; 60–66″, 1.

Comparisons: A widely distributed late type in the West.

Fenenga 1952: 344, Yokuts, Tulare County, California.

Haury 1950: fig. 56, Papago Ventana Cave, Arizona.

Hunt 1953: fig. 8, La Sal Mountain Area, Utah.

Hunt 1960: 236, fig. 61, Death Valley III and IV, California.

Meighan 1954: 223, San Luis I, southern California.

Riddell 1951: fig. 1, Paiute, Owens Valley, California.

Riddell 1960: 15–16, fig. 4, pl. 2, Type 1c, Karlo Site, California.

Rogers 1939: pl. 18, Paiute and Shoshonean, southern California Deserts.

Rudy 1953: 122, fig. 37, western Utah.

Shutler 1961: 36, pls. 64, 66, Group M, Lost City, Nevada.

Taylor 1957: fig. 53, central Utah.

Treganza 1942: fig. 11, eastern and desert Diegueño, and Baja California.

Wedel 1941: pl. 38, Protohistoric Yokuts, Buena Vista Lake, California.

5d 2 specimens (Pl. 5, Fig. 5)

Form: Two broad thick equilaterally triangular points. The edges are convex, the bases thinned and deeply concave. The flaking is random.

Material: Both points are made of obsidian.

Size: One point is 2.8 cm. long, 2.2 cm. wide, and .6 cm. thick; the other is 2.2 cm. long, 1.9 cm. wide, and .55 cm. thick.

Distribution in the Midden: One is from the 54-60-inch level and the other from the 60–66-inch level.

Comparisons: A type considered by some to be a variant of the Pinto point.

Bryan and Toulouse 1943: pl. 22, San Jose and Lobo, New Mexico.

Campbell and Ellis 1952: fig. 71, Atrisco, New Mexico.

Jennings 1957: 131, Type W41, Danger Cave, Utah.

Mulloy 1958: Pictograph I, Wyoming.

Rogers 1939: 54, pl. 13, Type I, Pinto, southern California.

5e 2 specimens (Pl. 5, Fig. 5)

Form: Small, broad, and thick unifacially flaked points or knives. The edges are straight and the bases slightly convex. The flaked side has a distinct keel. The flaking is random.

Material: One point is made of obsidian; the other of grey ignimbrite.

Size: The obsidian point is 3.1 cm. long, 2.1 cm. wide, and .85 cm. thick. The other is 2.8 cm. long, 1.9 cm. wide, and .7 cm. thick.

Distribution in the Midden: 0–6″, 1; 18–24″, 1.

5f 2 specimens (Pl. 5, Fig. 5)

Form: Stemless asymmetrical triangular points with straight thinned bases and one straight edge, which rises vertically to the tip, and one convex edge. The edges are serrated. On one point the base is broken. It seems to have originally had one side notch. The flaking is well directed.

Material: Obsidian.

Size: One point has a length of 3.7 cm., a width of 1.8 cm., and a thickness of .4 cm. The other, bearing the side notch, has a length of 3.2 cm., a width of 1.9 cm., and a thickness of .3 cm.

Distribution in the Midden: 12–36″, 1; 48–54″, 1.

Category 6—Parallel-sided Stemmed Points

6a 11 specimens

Form: Elongated lanceolate form with a well-developed parallel-sided stem. The shoulders are rounded. The base of the stem is concave. The flaking varies from being random to carefully and obliquely directed.

Material: Eight of the points are made of obsidian, one of white chert, and two of grey ignimbrite.

Size: The lengths of three points can be measured; these are 4.7 cm., 4.3 cm., and 3.9 cm. Six measurable widths range from 2.7 to 1.3 cm.; the average is 2.21 cm. The thickness of the 11 points varies between .7 and .4 cm. The average thickness is .576 cm.

Distribution in the Midden: 18–24″, 1; 36–42″, 1; 42–48″, 1; 54–60″, 1; 60–90″, 3; 66–72″, 1; 84–90″, 1; 90–96″, 1; no provenience, 1.

Comparisons: A widely distributed early point in the West; a variant of the Pinto point.

Amsden 1935: 57, pl. 13, Pinto site, southern California.

Gruhn 1961a: 61–62, pl. 14, Wilson Butte Cave, Assemblage III, Idaho.

Haury 1950: fig. 61, Ventana Cave, Arizona.

Hindes 1962: pl. 1, Huntington Lake, California.

Hunt 1960: fig. 24, Early Death Valley II, California.

6b 2 specimens

Form: Leaf-shaped asymmetrical stemmed points. One edge is straight, or nearly so, and rises vertically to the tip. The other edge is convex. The first point is side-notched with what appears to be a concave base, though it has been broken. The second point has weakly developed shoulders and a parallel-sided unthinned stem with a slightly convex base. The flaking is random.

Material: Obsidian.

Size: The first point has a length of 3.2 cm., a width of 1.9 cm., and a thickness of .5 cm. The second point has a length of 4.5 cm., a width of 2.45 cm., and a thickness of .85 cm.

Distribution in the Midden: The first point came from the 66–72-inch level; the second from the 78–84-inch level.

In addition there are 226 fragments of projectile points that cannot be identified as to type. There are also three unfinished points, two of which look as though they were intended to be small corner-notched types, and the third a parallel-sided stemmed point.

Knives

k 1 10 specimens (Pl. 6)

Form: Medium-sized ovoid stemless blades. The edges are convex and retouched and the bases rounded. They are made on fairly thin flakes. The flaking is careless and random.

Material: Four of these knives are made of obsidian, three of chert, one of brown rhyolite, one of grey ignimbrite, and one of basalt.

Size: Four knives have measurable lengths. These range from 6.6 to 4.6 cm.; the average is 5.53 cm. The nine widths range from 3.9 to 3.1 cm.; the average is 3.57 cm. The thickness varies between .9 and .5 cm., the average being .75 cm.

Distribution in the Midden: 12–18″, 1; 0–24″, 1; 24–30″, 1; 30–36″, 2; 36–42″, 1; 36–48″, 1; 48–54″, 1; 54–60″, 1; 114–120″, 1.

Comparisons:

Amsden 1937: 77–78, pl. XXXIX 39, oval knives, Lake Mohave, California.

Heizer and Baumhoff 1961: 131, fig. 6d, Wagon Jack Shelter, Nevada.

Hunt 1953: 58, fig. 23, La Sal Mountain area, Utah.

Jennings 1957: 134, Type W44, Danger Cave, Utah.

Rudy 1953: 117, fig. 36, IIA2, western Utah.

Shutler 1961: 37, pls. 67, 68, Group A, Lost City, Nevada.

Tuohy 1963: 53–54, pl. 25, Knife Types 2 and 3, Idaho and Nevada.

k 2 8 specimens (Pl. 6)

Form: None of the specimens are complete, but they appear to be fragments of a long lanceolate knife with convex retouched edges and a straight or slightly convex base. The flaking is random.

Material: Four are made of obsidian, two of ignimbrite, one of basalt, and one of chert.

Size: None of the lengths could be measured. The largest fragment is 6.5 cm. long. This knife type therefore seems to be longer and more slender than type *k 1*. The width of the blades ranges from 3.1 to 2.2 cm., the average being 2.68 cm. The thickness ranges from 1.0 cm. to .7 cm.; the average is .82 cm.

Distribution in the Midden: 0–12″, 1; 18–24″, 2; 24–30″, 1; 30–36″, 1; 48–54″, 1; 54–60″, 1; 66–72″, 1.

Comparisons:

Amsden 1937: 78–79, pl. XL, leaf-like blade, Lake Mohave, California.

Campbell and Campbell: 40–42, pl. 11, Pinto Basin Site, California.

Heizer and Krieger 1956: 29–30, pl. 15, Humboldt Cave, Nevada.

Riddell 1960: 31, pl. 1c, Karlo Site, California.

Rudy 1953: 117, fig. 36, IIA1, IIA2, western Utah.

Shutler 1961: 37, pls. 67, 68, Group A, Lost City, Nevada.

k 3 2 specimens (Pl. 6)

Form: These are lanceolate blades. Though both the retouched edges are convex, one is considerably more rounded than the other, giving the knife an asymmetrical appearance. The base is constricted to form a narrow stem. The flaking is random.

Material: Chert.

Size: One specimen is fragmentary and shows only the stem and a small portion of the asymmetrical edges. The other measures in length, 6.2 cm.; in width, 2.8 cm.; in thickness, .7 cm.

Distribution in the Midden: 0–24″, 1; 36–42″, 1.

Comparisons:

Riddell 1960: 31, pl. 1c, Karlo Site, California.

k 4 2 specimens (Pl. 6)

Form: The tip fragments are of what would appear to be very crudely flaked, thick lanceolate knives. The edges, although quite irregular, were proably convex. There is a lateral twist to the tip.

Material: Chert.

Size: The specimens are only fragments, but one is 4 cm. long, 2.7 cm. wide, and .8 cm. thick; the other is 4.3 cm. long, 3.2 cm. wide, and .8 cm. thick.

Distribution in the Midden: 24–30″, 1; 90–114″, 1.

Comparisons: These fragments closely resemble the middle knife in fig. 120a of Jennings (1957) Danger Cave report.

Jennings 1957: 139, W50, Danger Cave, Utah.

k 5 1 specimen (Pl. 6)

Form: A fragment of a very wide and flat lanceolate blade. The edges are retouched and convex; the base is concave. The flaking is random.

Material: Obsidian.

Size: The total length of the knife could not be measured, but the fragment is 4.5 cm. long. The width is 5.2 cm.; the thickness, .9 cm.

Distribution in the Midden: 0–24″, 1.

Comparisons:

Heizer and Baumhoff 1961: 132, fig. 6d, Wagon Jack Shelter, Nevada.

Tuohy 1963: 54, pl. 25, Knife Type 4, Idaho and Nevada.

k 6 17 specimens (Pl. 6)

Form: Random flakes, unretouched; one or more edges show signs of wear, suggesting that they have been used as knives.

Material: Seven are flakes of obsidian, three are basalt, six chert, and one rhyolite.

Size: The lengths range from 6.6 cm. to 3.5 cm.; the average is 4.9 cm. The widths range from 3.7 to 1.6 cm.; the average being 2.7 cm. The thickness varies between 1.25 cm. and .5 cm.; the average thickness is .8 cm.

Distribution in the Midden: 12–18″, 4; 24–30″, 3; 30–36″, 4; 36–42″, 2; 48–60″, 2; no provenience, 1.

k 7 7 specimens (Pl. 6)

Form: Random flakes, but one or more edges have been retouched to form a knife. These knives tend to be formed on smaller flakes than those in *k 6*.

Material: Predominately obsidian. One knife is made of grey ignimbrite and one of chert.

Size: The length ranges from 4.9 to 2.3 cm., the average being 3.5 cm. The width ranges from 2.8 to 1.9 cm.; the average is 2.42 cm. The thickness ranges from .6 cm. to .3 cm.; the average is .46 cm.

Distribution in the Midden: 18–24″, 1; 24–30″, 1; 30–36″, 1; 36–42″, 1; 54–60″, 1; 126–130″, 1; no provenience, 1.

There are also 49 small fragments of leaf-shaped blades which could have served as knives or points.

The fragments are too small to allow further description. Six of them are made of chert, one of rhyolite; the rest are obsidian.

Distribution in the Midden: (Rhyolite) 24–30″, 1; (Chert) 12–18″, 1; 18–24″, 1; 30–36″, 1; 42–48″, 2; 114–120″, 1; (Obsidian) 0–12″, 1; 0–18″, 2; 0–36″, 1; 6–12″, 1; 12–18″, 4; 18–24″, 5; 18–36″, 2; 24–30″, 3; 30–36″, 3; 36–42″, 1; 36–48″, 1; 42–48″, 4; 48–54″, 2; 48–60″, 4; 54–60″ 1; 60–66″, 2; 66–72″, 2; 90–114″, 2.

Drills, Gravers, and Perforators

d 1 7 specimens (Pl. 6)

Form: Suitable flakes which have a corner or point reduced by secondary flaking to a sharp drill-like projection. Four of the specimens show signs of retouching along one or more edges of the body of the flake.

Material: Predominately obsidian; two drills are made of chert.

Size: The lengths of these graver/drills range from 5.25 to 1.90 cm., the average being 3.22 cm. The widths range from 2.6 to 1.2 cm.; the average is 2 cm. The thickness varies between 1.3 and .3 cm.; the average is .72 cm.

Distribution in the Midden: 6–12″, 2; 24–30″, 1; 36–42″, 1; 60–90″, 1; 66–72″, 1; no provenience, 1.

Comparisons:

Heizer and Baumhoff 1961: 127, fig. 5r, Wagon Shelter, Nevada.

Jennings 1957: 167, Type W87, Danger Cave, Utah.

Rudy 1953: 128, fig. 40, western Utah.

Tuohy 1963: 58, pl. 24, Drill Type 2, Nevada and Idaho.

d 2 4 specimens (Pl. 6)

Form: The bases of all four specimens have been broken off. A long, slender drill section widens down into what was probably some kind of an expanding base.

Material: Two of the drills are obsidian, one basalt and one chert.

Size: Although none of these drills is complete, the fragments were measured. The lengths range from 4 to 2.6 cm., the average being 3.4 cm. The widths range from 1.5 cm to .8 cm.; the average is 1.2 cm. The thickness ranges from .6 to .4 cm., the average being .47 cm.

Distribution in the Midden: 0–12″, 1; 18–24″, 2; 36–42″, 1.

Comparisons:

Heizer and Baumhoff 1961: 127, fig. 5*o*, Wagon Jack Shelter, Nevada.

Jennings 1957: 166, W86, Danger Cave, Utah.

Morris and Burgh 1954: 57, fig. 83, Durango, Colorado.

Riddell 1960: 32, pl. 1A, Karlo Site California.

Rudy 1953: 128, fig. 40, Western Nevada.

Tuohy 1963: 58, pl. 24, Drill Type 1, Nevada and Utah.

d 3 2 specimens (Pl. 6)

Form: These graver/drills are both made by chipping the tip of a small leaf-shaped blade into a short drill-like projection. The edges and bases are convex. The flaking is random. One specimen is flaked on only one face; the other on both faces.

Material: The bifacially flaked drill is made of grey ignimbrite; the other of obsidian.

Size: The obsidian drill is 3.9 cm. long, 2.3 cm. wide, and .4 cm. thick. The other is 2.6 cm. long, 1.3 cm. wide, and .45 cm. thick.

Distribution in the Midden: 0–18″, 1; 18–24″, 1.

Comparisons:

Hunt 1960: 243, fig. 64, Death Valley III or IV, California.

Scrapers

s 1 5 specimens (Pl. 6)

Form: Medium-sized random flake. One edge has been retouched to form a side scraper.

Material: Two are made of obsidian and one of chert.

Size: The lengths range from 8.7 to 4.1 cm., the average being 6.36 cm. The widths range from 5.4 to 2.6 cm.; the average is 3.48 cm. The thickness ranges from 2.6 to 1.1 cm.; the average is 1.68 cm.

Distribution in the Midden: 24–30″, 1; 54–60″, 1; 66–72″, 1; 126–130″, 1; no provenience, 1.

Comparisons:

Rudy 1953: 132, fig. 42, western Utah.

s 2 3 specimens (Pl. 6)

Form: Medium plano-convex. One end has been retouched to form a snub-nosed end scraper. The convex surface bears flaking scars.

Material: Two are made of obsidian and one of basalt.

Size: The lengths are 4.5, 4.4, and 3.2 cm.; the widths 3.4, 3.2, and 2.2 cm. The scrapers are 1.8, 1.0, and 1.0 cm. thick.

Distribution in the Midden: Surface, 1; 24–30″, 1; 42–48″, 1.

Comparisons:

Amsden 1937: 63–66, pl. 31, Lake Mohave, California.

Riddell 1960: 32, pl. 1A, Karlo Site, California.

Tuohy 1963: 55, pl. 26, Type 1, Idaho and Nevada.

s 3 10 specimens (Pl. 6)

Form: Small discordal scrapers flaked on one or both faces. The entire perimeter has been retouched to form a "thumbnail" scraper.

Material: Predominately obsidian; three are made of chert.

Size: The lengths range from 3.9 to 2.4 cm., the average being 3.1 cm. The widths range from 3.5 to 1.8 c.m.; the average is 2.4 cm. The thickness varies from 1.2 to .4 cm.; the average is .83 cm.

Distribution in the Midden: 12–18″, 1; 0–24″, 1; 24–30″, 2; 30–36″, 1; 48–60″, 1; 60–66″, 1; 60–90″, 1; 102–108″, 1.

s 4 3 specimens (Pl. 6)

Form: Larger discordal scrapers flaked on one or both faces. The entire perimeter has been retouched. Probably a variant of *s 3*.

Material: One scraper is made of obsidian, one of chert, and one of basalt.

Size: The lengths are 6.6, 5.4, and 5.3 cm. The widths are 3.4, 3.3, and 3.2 cm. The thicknesses measure 1.8, 1.4, and 1.1 cm.

Distribution in the Midden: 18–24″, 1; 30–36″, 1; 60–90″, 1.

Comparisons:

Amsden 1937: 61, pl. 29, Lake Mohave, California.

Rudy 1953: 35, fig. 43, western Utah.

s 5 2 specimens (Pl. 6)

Form: Both are random flakes, retouched along the edges to form a "spoke shave." One is flaked only along one concave edge; the other has an irregular outline and is flaked along both edges in such a way as to form two concave scrapers.

Material: One is made of chert, the other of rhyolite.

Size: The scraper flaked along both edges is 7 cm. long, 2.2 cm. wide, and .6 cm. thick. The other is 5.5 cm. long, 3.5 cm. wide, and 1.5 cm. thick.

Distribution in the Midden: 0–36″, 1; 72–78″, 1.

Comparisons:

Amsden 1937: 76–77, pl. 38, Lake Mohave, California.

Tuohy 1963: 56, pl. 26, Type 6, Nevada and Idaho.

s 6 1 specimen (Pl. 6)

Form: This is a rectangular flake, retouched along both converging edges and one end to form a side and end scraper.

Material: Chert.

Size: It is 4.5 cm. long, 2.4 cm. wide, and .9 cm. long.

Distribution in the Midden: 12–18″, 1.

s 7 2 specimens (Pl. 6)

Form: These scrapers are in the shape of a crude crescent. One is flaked on both faces and has the convex edge retouched. The other is flaked on only one face, but bears retouching scars all around its perimeter.

Material: The bifacially flaked specimen is made of grey ignimbrite; the other of basalt.

Size: The bifacially flaked scraper is 4.2 cm. long, 1.9 cm. wide and .8 cm. thick. The basalt scraper is 4.3 cm. long, 2.1 cm. wide, and .5 cm. thick.

Distribution in the Midden: 12–18″, 1 (basalt); 42–48″, 1 ignimbrite.)

Comparisons:

Amsden 1937: 76–77, pl. 38, Lake Mohave, California.

Rogers 1939: 36, pl. 8a (Playa), Mohave Desert, California.

Tuohy 1963: 56, pl. 26i, Type 5, Nevada and Idaho.

s 8 13 specimens (Pl. 6)

Form: Small unretouched random flakes. One or more edges bear some evidence of use, suggesting that they were employed as side or end scrapers.

Material: Three of the specimens are made of chert; the rest are obsidian.

Size: The lengths range from 4.8 to 2.2 cm.; the average is 3.05 cm. The widths vary between 3.4 and 1.6 cm., the average being 2.37 cm. The thickness ranges from 1.4 to .4 cm.; the average thickness is .769 cm.

Distribution in the Midden: 0–24″, 2; 12–18″, 1; 18–24″, 3; 30–36″, 1; 48–60″, 2; 60–90″, 2; 72–78″, 1; no provenience, 1.

Unmodified Flakes

23 specimens

There are 23 unmodified flakes in the collection which probably represent debris from the manufacture of flake stone artifacts. Fourteen are obsidian, seven are chert, one basalt, and one red ignimbrite.

Distribution in the Midden: (Obsidian) surface, 1; 12–18″, 3; 24–30″, 1; 30–36″, 4; 48–54″, 1; 48–60″, 2; 66–72″, 1; 72–78″, 1; (Chert) 0–24″, 1; 12–18″, 3; 18–24″, 1; 24–30″, 1; 30–36″, 1; (Basalt) 60–66″, 1; (Ignimbrite) 24–30″, 1.

Cores

6 specimens (Pl. 8, *c* and *f*)

There are six small cores, all obsidian from Deer Creek Cave. Four are plano-convex in shape, two roughly spherical. None shows any sign of use.

Distribution in the Midden: 0–36″, 1; 18–24″, 1; 48–60″, 1; 90–114″, 1; 114–120″, 1; 126–130″, 1.

GROUND STONE ARTIFACTS

Metates

4 specimens (Pl. 7)

Three of the examples of metates from Deer Creek Cave are fragmentary. The first is a fragment of a milling stone fashioned from a block of andesite. It is roughly triangular in shape; 21 cm. long, 21 cm. wide across the wide end, and 9 cm. across the narrow end. Its greatest thickness is 8 cm. at the wide end, tapering to 4 cm. thick at the narrow end. The top surface alone is modified. It is ground down to a perfectly flat surface with no trace of a depression. It came from the 0–24-inch level.

The second is a fragment of a slab metate, roughly rectangular in shape, 23 cm. long, 17 cm. wide, and 5 cm. thick. It is unmodified except for the grinding surface which is smooth and flat with no depression. It came from the 24–30-inch level.

The third metate is complete. It has rather a "leaf-shaped" appearance with one rounded and one tapering end. It is made from a thin slab of adesite, is 25 cm. long, 18.5 cm. wide at the widest point, and 2.5 cm. thick. The edges are smoothed off and the grinding surface is flat with no depression. The center of the grinding surface bears long straight serrations. Presumably a back and forth grinding motion was used. It came from the 24–30-inch level.

The fourth is a diamond-shaped fragment of a slab metate. Its present measurements are 28 cm. long, 22.5 cm. wide, and 6.5 cm. thick. The metate was shaped by pecking. The bottom surface of the slab is slightly convex, the edges rounded, and the grinding surface flat. It came from the 0–24-inch level and is again made of andesite.

No manos were found at Deer Creek Cave.

Comparisons:

Haury 1950: 305–306, fig. 69, Ventana Cave, Arizona.

Heizer and Baumhoff 1961: 134, Wagon Jack Shelter, Nevada.

Jennings 1957: 209–212, fig. 191, Danger Cave, Utah.

Riddell 1960: 38–44, Karlo Site, California.

Tuohy 1963: 59, pl. 30, Idaho and Nevada.

Shaft Smoother

1 specimen (Pl. 8, *d*)

A fragment of a shaped and grooved shaft smoother was found. It has rounded or "boat-shaped" ends, and the bottom is rounded. The fragment is 6.3 cm. long, 1.8 cm. wide, and 2 cm. thick. The groove is 1 cm. wide and .35 cm. deep. It is made of sandstone and came from the 54–60-inch level.

Comparisons:

Tuohy 1963: 60, pl. 28, Idaho and Nevada.

A Problematical Artifact

1 specimen (Pl. 8, *e*)

A portion of a smoothly surfaced tabular piece of andesite has been crudely trimmed by pecking to a sub-rectangular form. It bears no signs of use or wear, and its function is unknown. The specimen is 7.5 cm. long, 6.4 cm. wide, and 1.8 cm. thick. It came from the 78–84-inch level.

Stone Disc Beads

5 specimens (Pl. 8, *a*)

Five small polished stone beads, four of them made of steatite and one of yellow chert, were found in the 12–18-inch level of pit C2. The central perforation of four of them was made by drilling through the bead from one direction. The fifth was biconically drilled. The diameters of the steatite beads are .8, .8, .7, and .65 cm. The widths of the perforations are .2, .15, .15, and .15 cm.; and the thicknesses are .15, .1, .1, and .1 cm. The polished chert bead is .7 cm. in diameter, .2 cm. thick, and the diameter of its perforation is .3 cm.

From the same level and pit comes a shell disc bead, charred, similar in every respect to the stone beads described above.

Another stone disc bead comes from the same level of the adjacent pit, B2. It is made of black steatite;

has a diameter of .7 cm., a thickness of .1 cm., and the diameter of its perforation is .2 cm. The perforation was drilled through from one side.

Similar beads are reported from the top layers of Danger Cave (Jennings 1957: 219, fig. 199), and from the Late Horizon of Central California (Beardsley 1954: 44), where they are sometimes associated with objects of European manufacture.

Pipe Fragment

1 specimen (Pl. 8, *b*)

The rim fragment of a stone pipe was found in the 0–24-inch level of Trench A. The material is a soft volcanic stone of reddish color. The lip is rounded with a slight inside bevel. The diameter taken between the outside walls of the bowl in 2.6 cm. The inside diameter is 1.7 cm.

BONE ARTIFACTS

Awls

a 1 8 specimens (Pl. 9, *h*)

Form: Splinters of large mammal bone have been carefully ground on one end to form a long, slender point.

Size: The lengths of these splinter awls range from 4.0 to 14.0 cm.; the average is 7.48 cm.

Distribution in the Midden: 6–12″, 1; 18–24″, 1; 24–30″, 2; 48–54″, 1; 54–60″, 1; 60–66″, 1; 90–114″, 1.

a 2 3 specimens (Pl. 9, *i*)

Form: Whole large mammal bones have been carefully ground on the distal end to form a long slender point.

Size: Two are fragments; the lengths of the other two specimens are 15.5 and 13 cm.

Distribution in the Midden: 18–24″, 1; 30–36″, 1; 36–48″, 1.

a 3 2 specimens (Pl. 9, *j*)

Form: Splinters of large mammal bone have been cut to form a point at one end.

Size: 8.6 and 6.4 cm. long.

Distribution in the Midden: 42–48″, 1; 48–54″, 1.

Flakers

2 specimens (Pl. 9, *g*)

Form: Two fragments of split large mammal long bone were found at Deer Creek Cave. The rounded ends of these show signs of wear. They were possibly used as flaking tools.

Size: One is 15 cm. long and the other, a fragment, 8 cm.

Distribution in the Midden: 30–36″, 1; 48–60″, 1.

Bone Beads or Tubes

3 specimens (Pl. 9, *a* and *c*)

Form: These are short segments of hollow bird bone. One is undecorated; one has a shallow incised groove encircling the tube at one end. The third, a fragment, has two deep incised grooves encircling it. It appears to have been identical with the incised bone tube illustrated by Jennings from Danger Cave (Jennings 1957: 202, fig. 180).

Size: The plain bone bead is 1.3 cm. long. The bead with one groove is 4.1 cm. long, and the last .8 cm. long.

Distribution in the Midden: 0–10″, 1; 12–18″, 1; 30–36″, 1.

Antler Tines

3 specimens (Pl. 9, *f*)

Three unmodified tips of antler tines came from the 6–12-inch level (1) and the 12–18-inch level. They could have been used as flakers.

WOODEN ARTIFACTS

Cut Stick

1 specimen (Pl. 9, *l*)

This is a broken stick of willow 22.5 cm. long and 1.1 cm. in diameter. It has been cut by two slanting strokes directed toward the center from opposite sides of the perimeter, leaving a ridge along the diameter. The stick comes from the 0–36-inch level.

Charred Stick

1 specimen (Pl. 9, *k*)

This is a short, broken stick of unidentified wood, 9.7 cm. long and .7 cm. in diameter. One end is charred; and there is an oval burned spot 1.7 cm. long and .7 cm. wide located on the side of the stick, 2.5 cm. below the charred tip. This stick comes from the 0–36-inch level.

Cut Seed

1 specimen (Pl. 9, *e*)

A slanting stroke near one end of a small oval juniper seed has cut one hole in it. The seed comes from the 0–12-inch level.

SHELL ARTIFACTS

1 specimen (Pl. 9, *b*)

One charred shell disc bead, possibly clam shell, was found in the 12–18-inch level of pit C2. It is .8 cm. in diameter; .2 cm. thick; and the central perforation, drilled through from one side, has a diameter of .3 cm. It appears to be similar to the clam shell disc beads found in Phase II of the Late Horizon of Central California (Beardsley 1954, Part I: 105).

CERAMICS

Eighteen sherds were recovered from the Deer Creek Cave midden. Two are rim sherds, and 16 body sherds. One body sherd was drilled for repair or hanging. Six sherds came from a depth of from 0–114 inches in Trench A at the front of the cave. But since there was a steep slope to the east, and the depth was measured from the highest point, the depth measurement is deceptive, as nowhere was the pottery more than 24 inches from the present surface. Three sherds came from Trench B, Pit 1, 6–12 inches; two sherds from Trench B, Pit 1, 12–18 inches; one sherd from Trench B, Pit 1, 30–36 inches; three sherds from Trench B, Pit 2, 0–12 inches, and three from Trench C, Pit 1, 0–18 inches.

This pottery is Shoshoni Ware, similar to that described by Tuohy (1956: 1963). Surface color ranges from light brown to black. Core color brown to black, no carbon streaks apparent. Surface finish wiped, smooth to the touch. No evidence of obliterated coils, but there is a suggestion of anvil depression on inside of sherds. Sherds are too small to be sure of the method of construction. Core texture fine to coarse; fracture, crumbling. Firing atmosphere uncontrolled, sherds too small to detect firing clouds. Temper, all sherds contain mica, more abundant in some than others, the mica is apparent on all surfaces; fine to coarse rounded quartz sand, some sherds contain large rounded opaque fragments. Temper varies enough to indicate that it was not obtained at the same place for all sherds, and suggests the presence of different groups at various times. Two rims, both slightly outcurving, and with rounded lips.

POST CONTACT ARTIFACTS

One fragment of an iron knife blade was found in the 0–24-inch level. A small, round, red glass trade bead with a black center was found in the 18–24-inch level. The bead is .35 cm. long and .45 cm. in diameter.

Figure 6 shows the distribution of the artifacts stratigraphically in Trench B, Pits 1 and 2, and Trench C, Pits 1 and 2, and the position of the carbon 14 dates. The data from Trench A lying across the front of the cave were not included. The deposit in the cave sloped down from the back to the front, and there was considerable mixture of earlier and later material in Trench A from materials rolling down the slope.

FIREHEARTHS

Eight firehearths were uncovered in the excavations in Deer Creek Cave. They were oval lenses of tightly packed ash and charcoal. Small quantities of broken rock were found in some of them, but none contained any trace of a rock hearth outline or of cooking rocks. They ranged in size from having a diameter of 8 inches up to a diameter of 6 feet; the thickness of the lens varied from 2 inches to 6 inches. All the hearths were located near the mouth of the cave. The size, depth, and location of each firehearth is shown on Figure 3.

RADIO CARBON SAMPLES

Seven radiocarbon samples yielded dates. Five of these were processed by Isotopes, Inc., and two by Washington State University Radiocarbon Laboratory.

I–1028: 10085±400 (1963). This sample is charcoal taken from Firehearth 8 at a depth of 101 inches below the surface. The date is 8135 B.C. ±400.

I–1029: 9670±300 (1963). The sample is charcoal taken from Firehearth 7 at a depth of 84 to 88 inches. The date is 7720 B.C. ±300.

I–1030: 2640±140 (1963). The sample is charcoal taken from Firehearth 4 at a depth of 42 to 45 inches. The date is 690 B.C. ±140.

I–1031: 4170±150 (1963). The sample is charcoal taken from Firehearth 2 at a depth of 12 inches. The date is 2220 B.C. ±150.

I–1032: 2585±150 (1963). The sample is charcoal taken from Firehearth 3 at a depth of 30 to 32 inches. The date is 635 B.C. ±150.

WSU–244: 715±140 (1964). The sample is charcoal collected from Firehearth 1 at a depth of 8 inches. The date is A.D. 1235±140.

WSU–245: 1510±110 (1964). The sample is wood collected from Trench C, Pit 2, at a depth of 12 to 18 inches. The date is A.D. 440±110.

INTERPRETATIONS

Throughout its history, Deer Creek Cave has been used principally as a camping spot for hunting parties. Analysis of the unmodified animal bone indicates that the hunters used the area immediately around the cave, bringing back with them entire animals from what must have been only a short distance. The mountain sheep seems to have been the main animal sought, although many other animals were also taken. The artifacts found in the cave—projectile points, knives, scrapers, and other implements useful in killing and butchering animals—are abundant. The almost complete lack of grinding tools may mean that not much seed gathering was done in the area. Though edible fishes were to be found in the Jarbidge River, they were pretty much ignored by the campers in the cave. Nothing was found in the cave to suggest a strictly seasonal occupation; but we suggest that in light of the steep walls of the narrow canyons of the area, and the long and inhospitable winters, Deer Creek Cave was used by people who made occasional trips to the area to hunt animal food and who carried on other economic pursuits elsewhere.

While at the cave, the hunters evidently manufactured and repaired their stone tools and weapons, and feasted upon the animals they had caught. No caches of stored goods were found. No burials were left in the cave. There is no evidence of any ritual use of it.

The front portions of the cave were most extensively used. The back is narrow and dark and the floor slopes up at an uncomfortable angle. The great bulk of the artifacts and food remains came from within the first 10 feet of the cave and the small ledge outside it. In this same area the soil is extremely ashy and several undisturbed firehearths were found.

There is no obvious natural or cultural stratigraphy within the cave deposits which would enable us to divide them into neat datable occupation zones. The floor is rough and sloping; and the fall of large boulders from the walls and roof from time to time have further broken up the cave floor surface, so that the rate of deposition has been uneven through time and the layers from one part of the cave are not necessarily contemporaneous with layers at the same depth at another part of the cave. The slope of the floor has allowed materials to roll downhill and mix earlier and later deposits. During its occupation rodents have dug burrows within the cave, churning the midden. Coyotes and bobcats lived in the cave in recent years, contributing to the mixture of the deposit. There were no caches, burials, or artifacts found within hearths to allow the association of several types of artifacts within a time placement. The cave deposits are wet and no perishable artifacts have survived to admit comparisons with the dated sequences of basket types found elsewhere in the Great Basin.

Some rough judgments can be made, though. The cave has been occupied by hunters for a long time, probably since about 8000 B.C. Below approximately 100 inches the deposit is composed mostly of rock and clay, and signs of human occupation are relatively scarce (see Fig. 7). The artifacts indicate a concern with hunting and quite closely resemble artifacts from Danger Cave to the southeast near the Nevada-Utah border. In higher levels the soil is extremely ashy and rich in charred and burnt bone and artifacts. There was evidently a denser occupation of the surrounding area and more frequent trips to the canyon by hunting parties.The artifacts increase not only in number but also in variety. New types of points and knives and scrapers are used though old forms are not abandoned. Resemblances are still strong to the archaeological sites in western Utah, and also to sites in the Plateau to the north. Corner- and end-notched darts and arrowheads typical of the southwestern United States and its peripheral area of influence are the most popular types of projectile points. These were sometimes found at levels which have extremely early radiocarbon samples (see Fig. 6). We feel that this association is due to the mixing of deposits and to possibly contaminated dates, and does not mean that these artifacts were used earlier in Nevada than in the Southwest. In any event the artifacts do show contact with the Puebloid Culture of western Utah. No Puebloid pottery was found in Deer Creek Cave, however. The resemblances are less between Deer Creek Cave and the Lovelock Culture of west-central Nevada. Perhaps the dampness in the cave has destroyed perishable objects which are found in abundance in Lovelock sites and which may have shown some contact between the two areas.

In the upper levels of the cave there is the simultaneous appearance of small Desert Side-notched points and Shoshoni pottery, an occurrence which probably marks the advent of the modern Shoshoni-speaking Indians to the Jarbidge area. The first appearance of these artifacts corresponds, more-or-less, to radiocarbon samples which indicate a date of about A.D. 500. We feel that this date is incorrect. Shoshoni pottery is found adjacent to the Jarbidge area. There is no evidence of

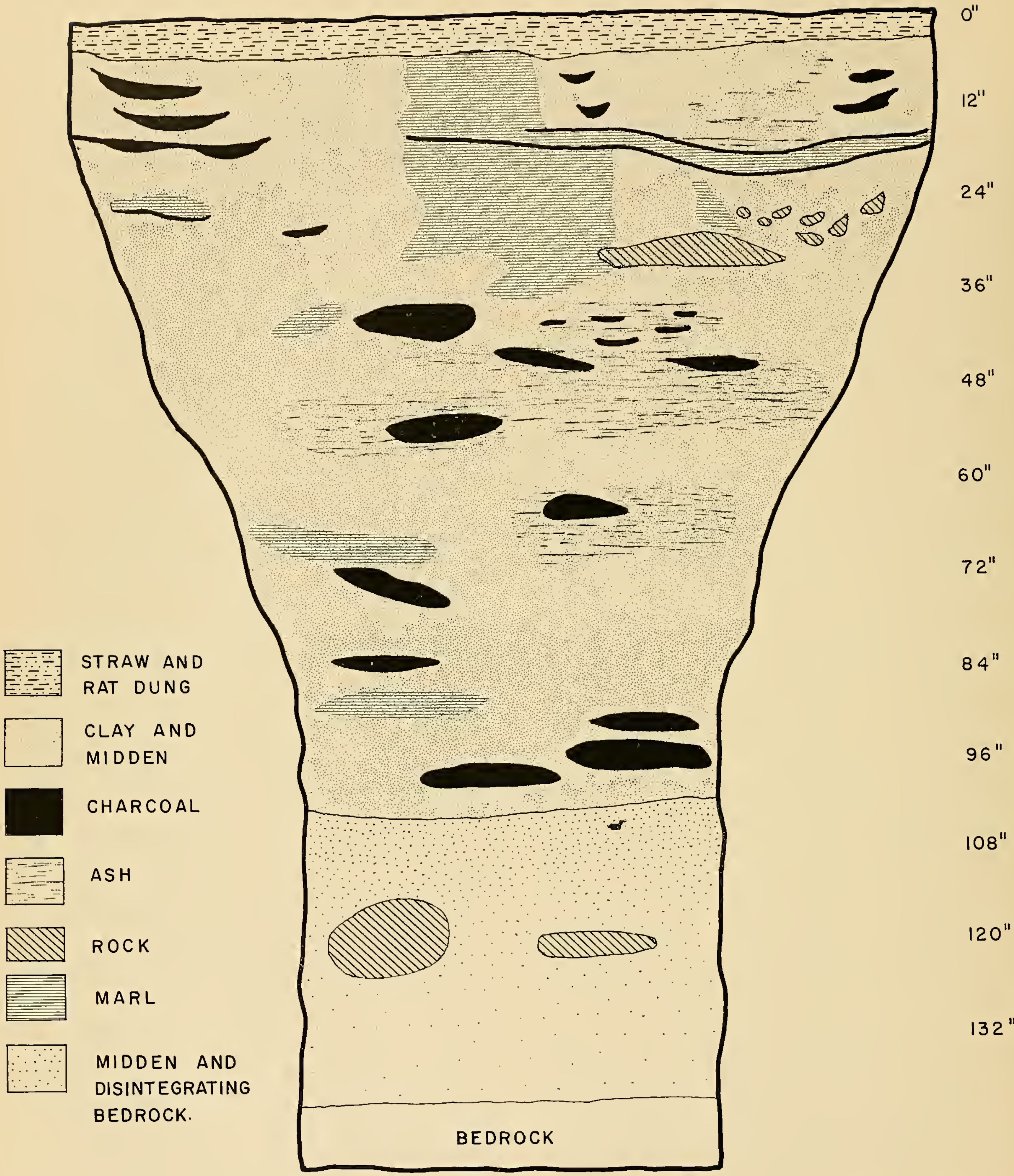

FIGURE 7, VERTICAL SECTION, DEER CREEK CAVE
NORTH FACE, TRENCHES "B" AND "C", PIT 2

any Shoshoni, Southern Paiute, or related ceramics earlier than A.D. 1150 anywhere in the West. Indeed at A.D. 500 there would seem to be no pottery at all in the northern periphery. The Desert Side-notched points have an even later appearance in California, although their first appearance in the Great Basin has not been precisely dated. The clam shell disc bead from the upper part of the deposit also points to a very late time. We would suggest that A.D. 1150 is the earliest possible date for Shoshoni occupation of this area, and that their actual entrance was probably very much later. In the upper levels which contain pottery and small side-notched points the amount of charred and split animal bone and the quantity of the artifacts falls off. It is only in these levels that metates were found. It is possible that the Shoshoni placed greater emphasis on seed gathering than the former occupants of the area and visited the cave less frequently.

The radiocarbon dates seem generally to be early. The cave deposit is wet. Runoff percolates through the midden which contains large lumps of marl. Could dead carbon from the lime have been incorporated into the charcoal from the firehearths?

Deer Creek Cave was used as a hunting camp first, not earlier than about 8000 B.C. It has continued to be so used up into protohistoric and likely even historic times. The people of the area were throughout their history in close contact with the occupants of the eastern portions of the Great Basin, and with the inhabitants of the Columbia Plateau. There is less evidence of communication between them and the Lovelock Culture. Sometime after A.D. 1150 the present Shoshoni people of northern Nevada entered the Jarbidge area. They had much the same technology and, by inference, subsistence patterns as earlier people. Although they introduced some new artifacts, old styles were retained.

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PLATE 2

PLATE 3

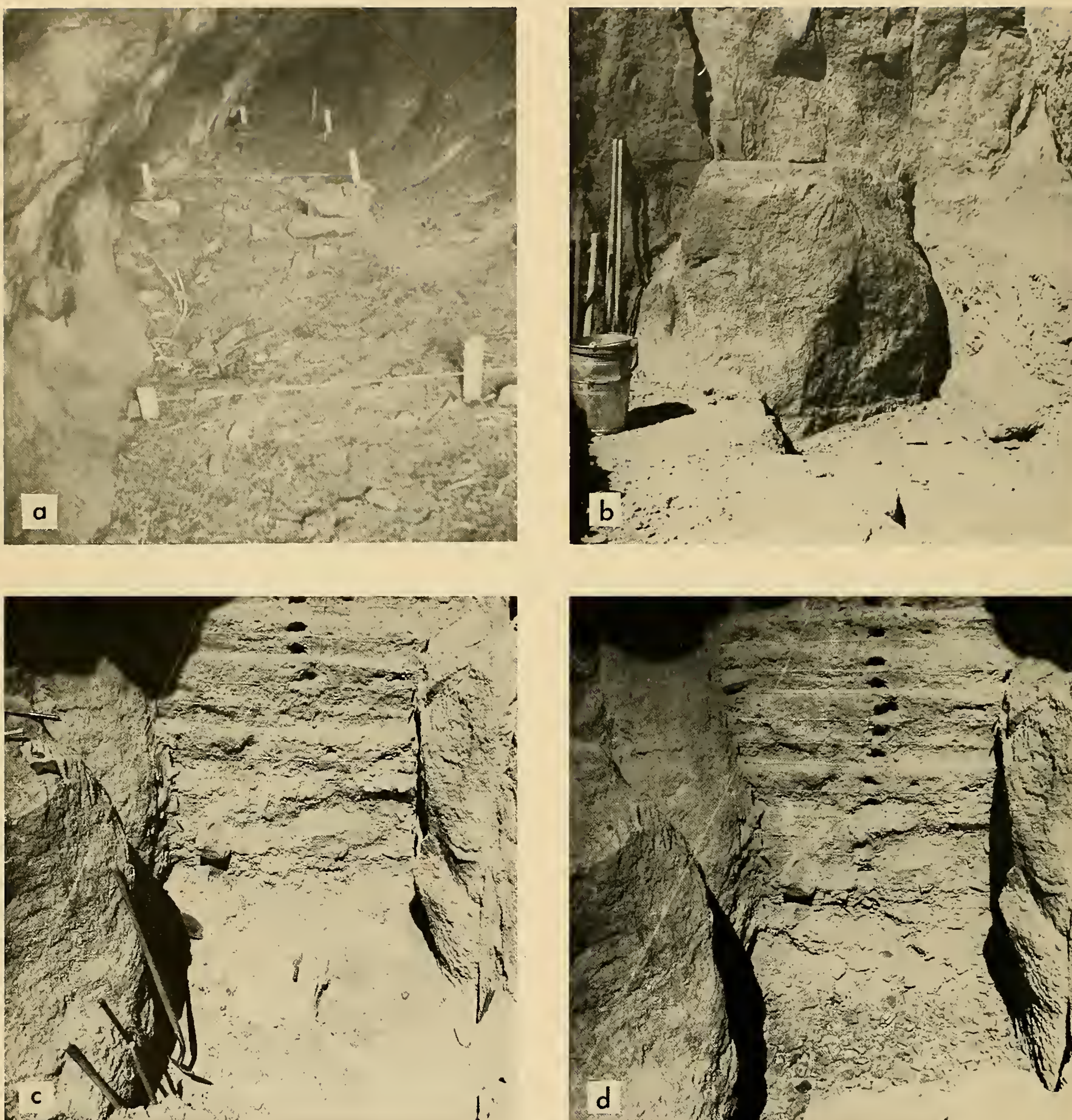


PLATE 4

PLATE 5

PLATE 5 (Continued)

PLATE 5 (Continued)

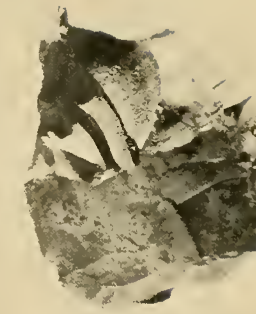
PLATE 6

PLATE 6 (Continued)

S1

S 2

S 3



S 4

S 5

S 6

S 7

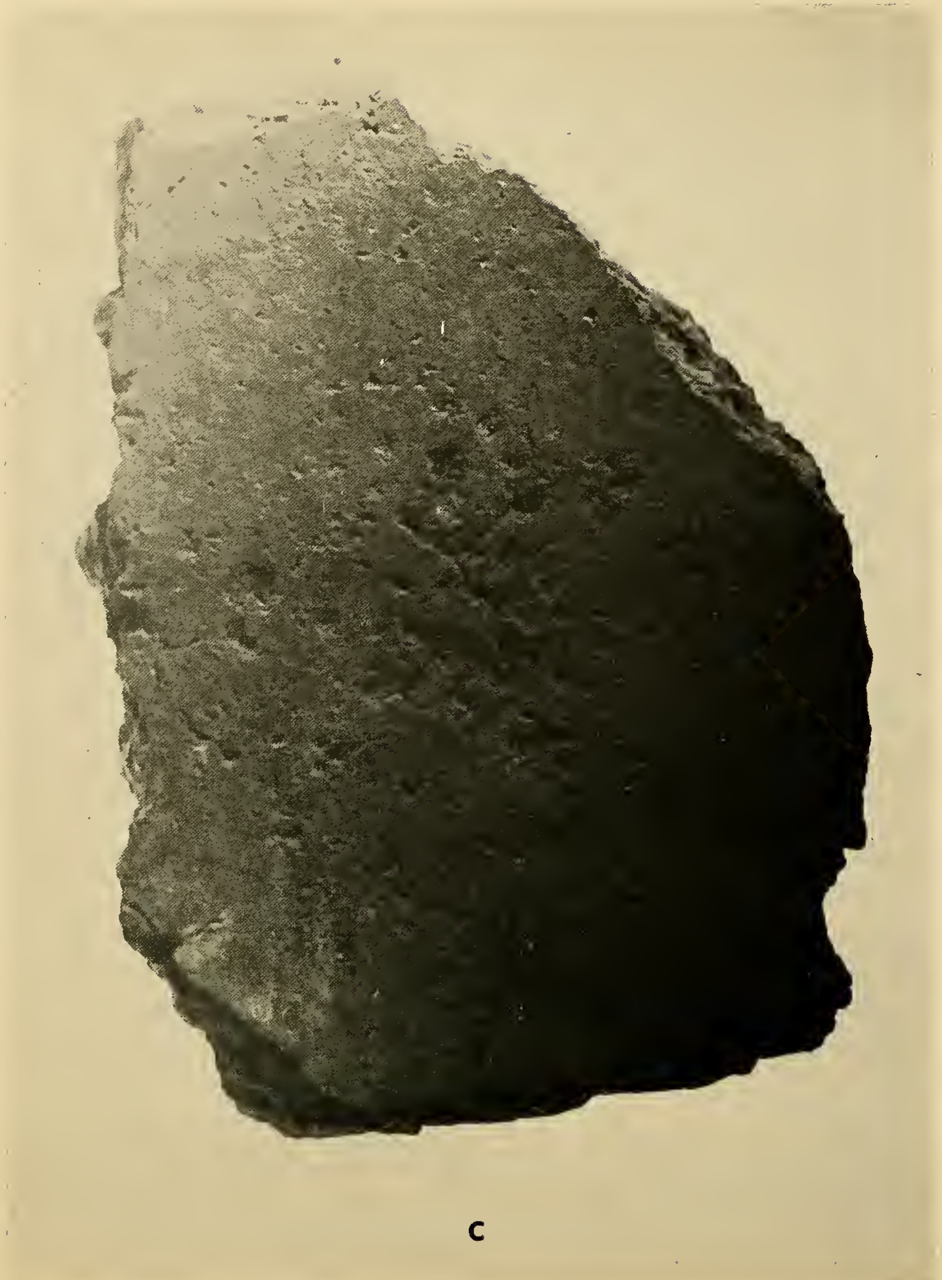
S 8

PLATE 7

a

b

PLATE 7 (Continued)



c

d

PLATE 8

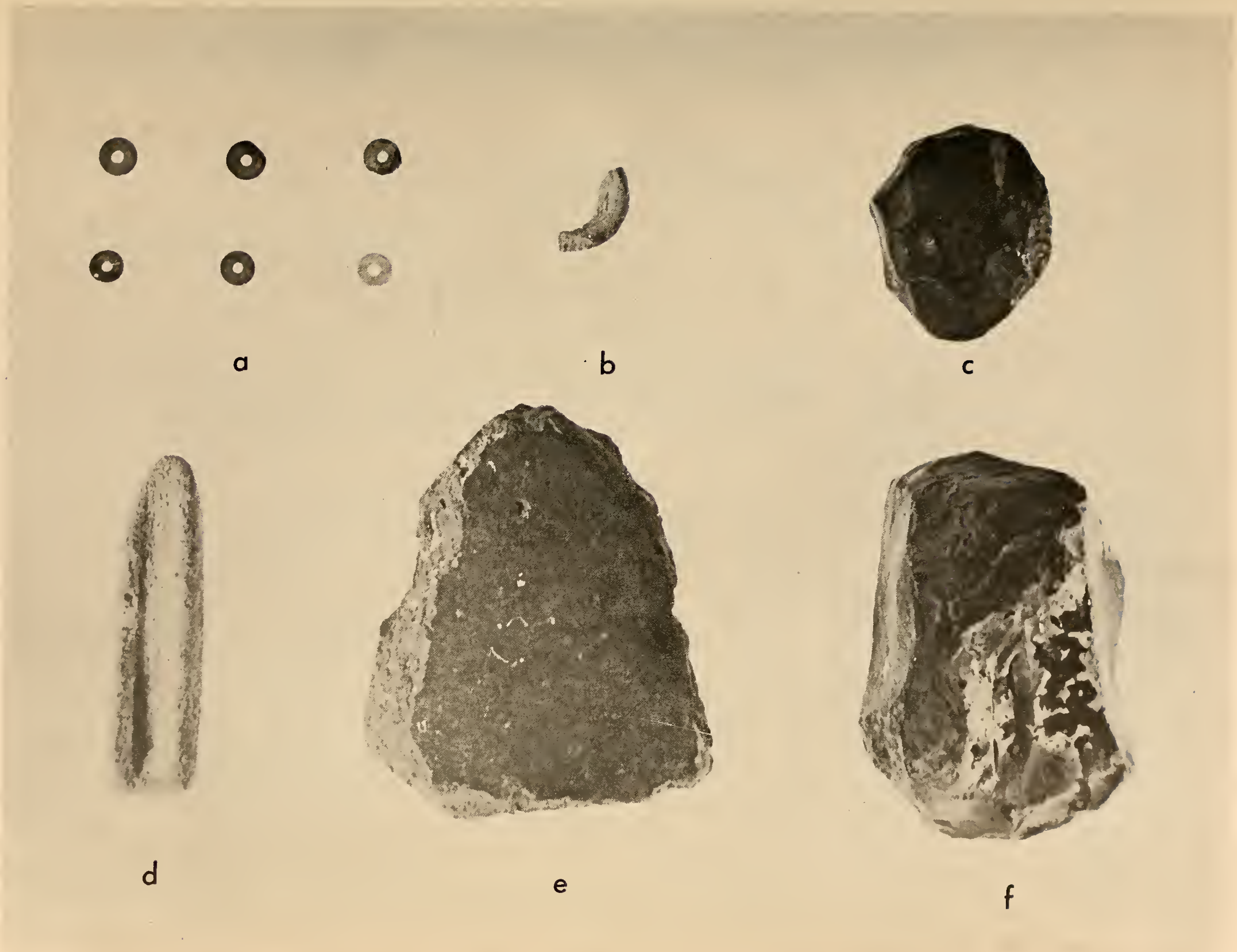
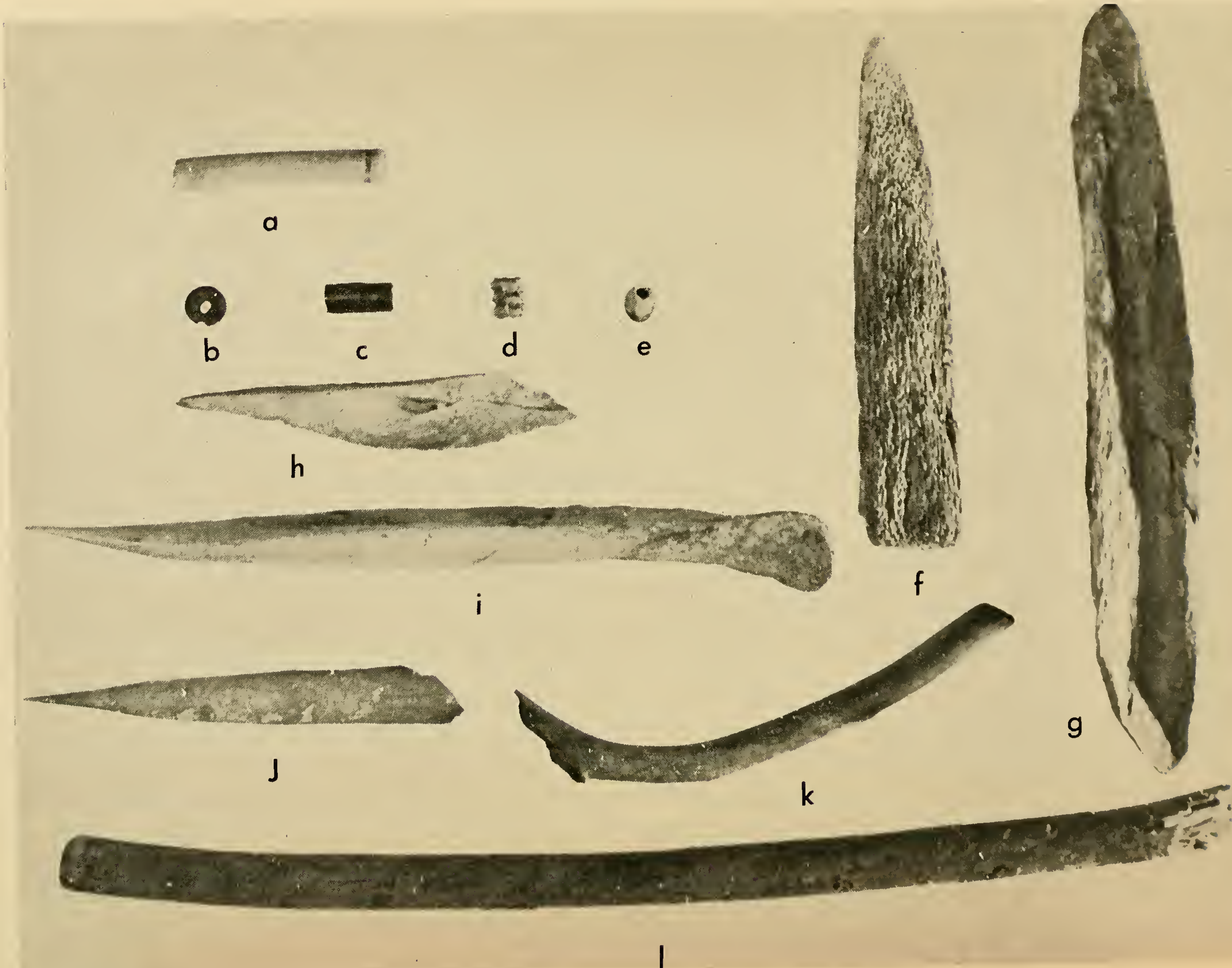


PLATE 9



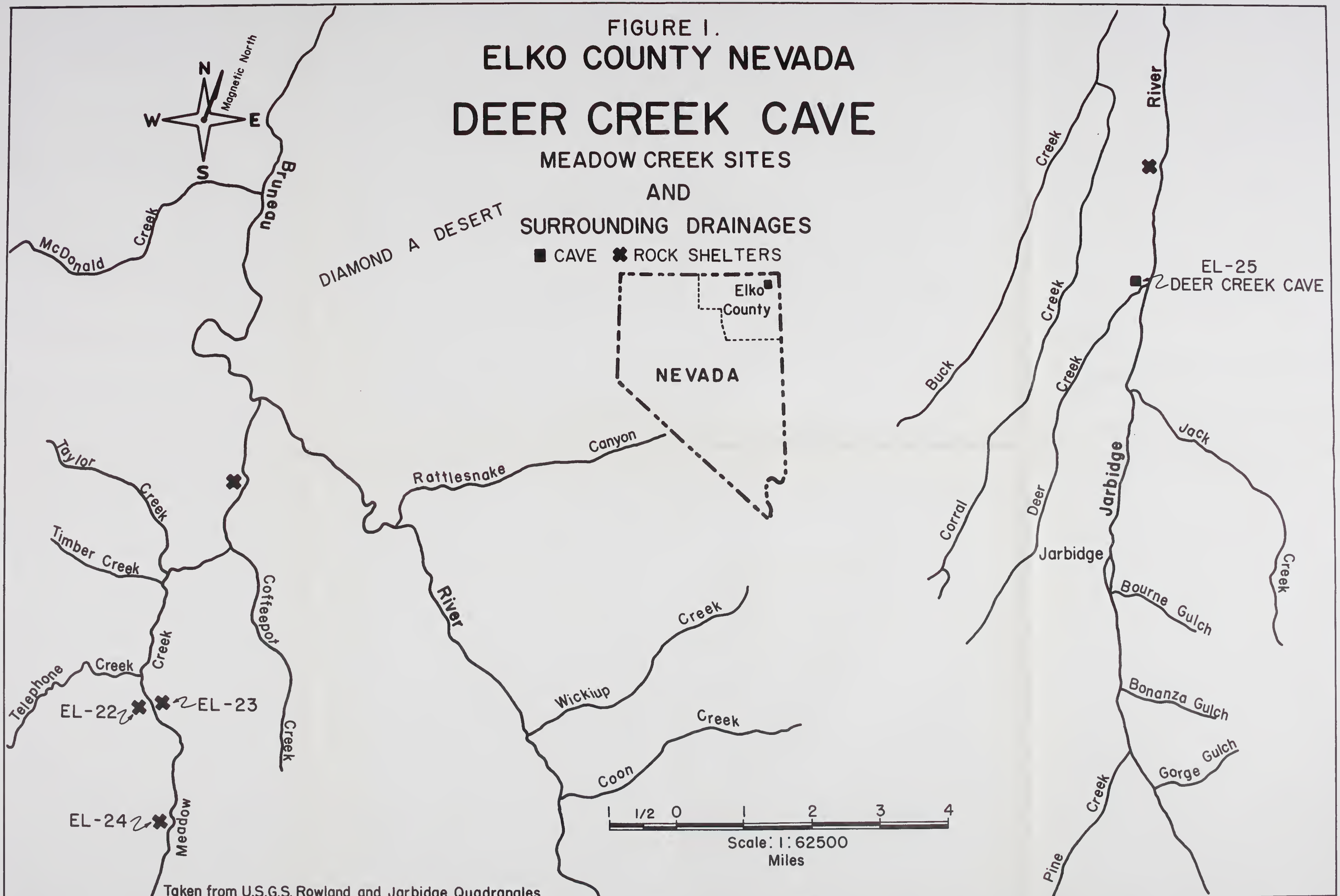


FIGURE I.
ELKO COUNTY NEVADA
DEER CREEK CAVE
MEADOW CREEK SITES
AND
SURROUNDING DRAINAGES
CAVE
ROCK SHELTERS
N
S
E
W
Magnetic North
DIAMOND A DESERT
McDonald
Creek
Bruneau
Elko
County
NEVADA
Rattlesnake
Canyon
River
Taylor
Creek
Timber Creek
Coffeepot
Creek
Telephone
Creek
Creek
EL-22
EL-23
EL-24
Meadow
Wickiup
Creek
Coon
Creek
EL-25
DEER CREEK CAVE
River
Creek
Buck
Creek
Creek
Corral
Deer
Jarbidge
Jarbidge
Jack
Creek
Bourne Gulch
Bonanza Gulch
Gorge Gulch
Pine
Creek
1 1/2 0 1 2 3 4
Scale: 1: 62500
Miles
Taken from U.S.G.S. Rowland and Jarbidge Quadrangles

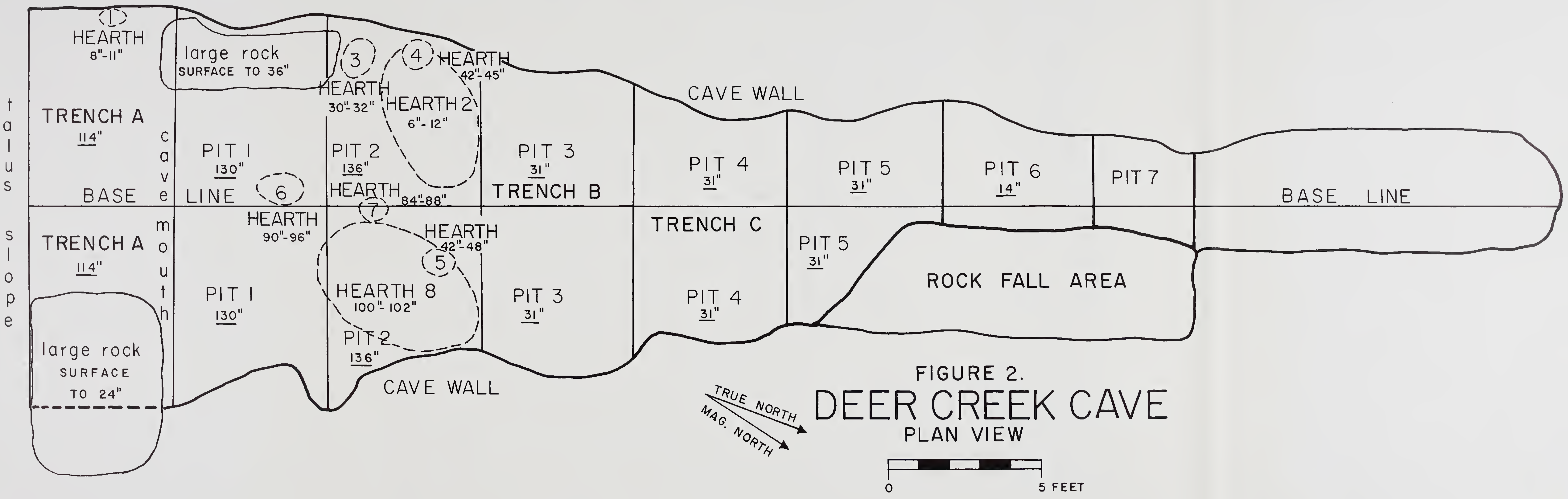


FIGURE 2.
DEER CREEK CAVE
PLAN VIEW

FIGURE 6. DISTRIBUTION OF ARTIFACTS, DEER CREEK CAVE